How to Stay Up in a Down Economy: Six ways to nurture yourself and your IT career during dark times. PAGE 27

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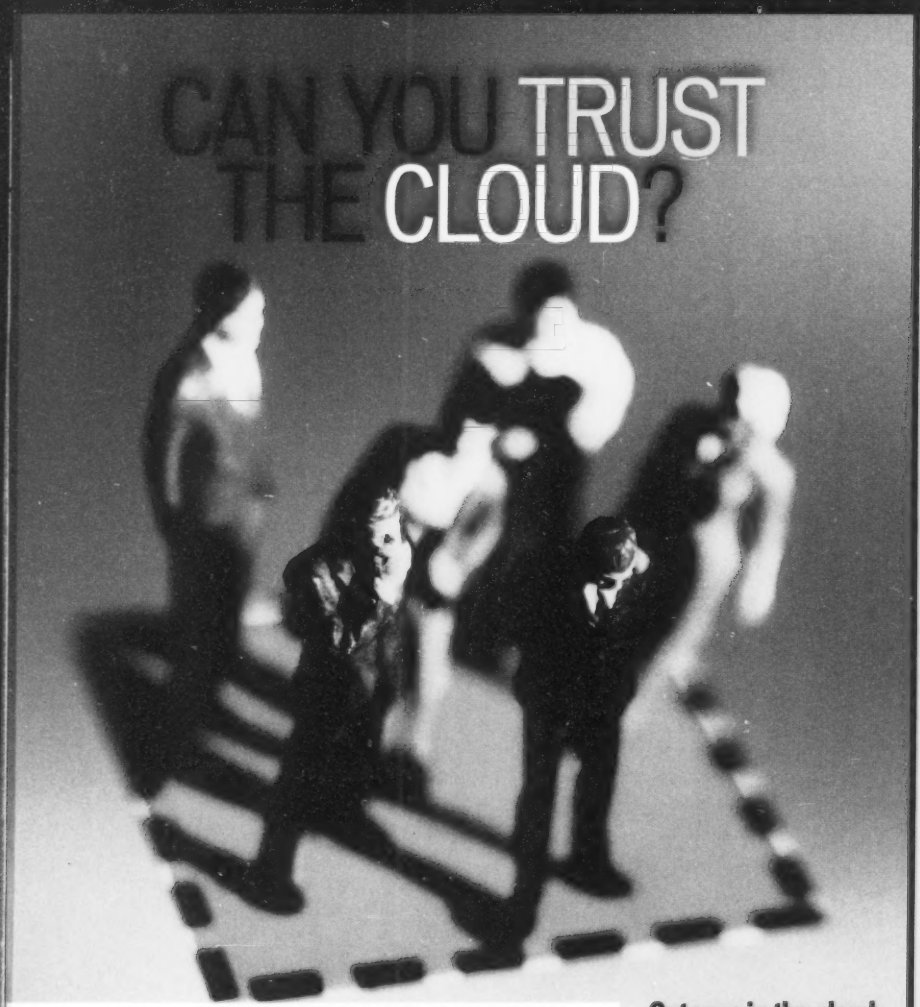

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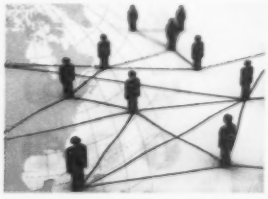

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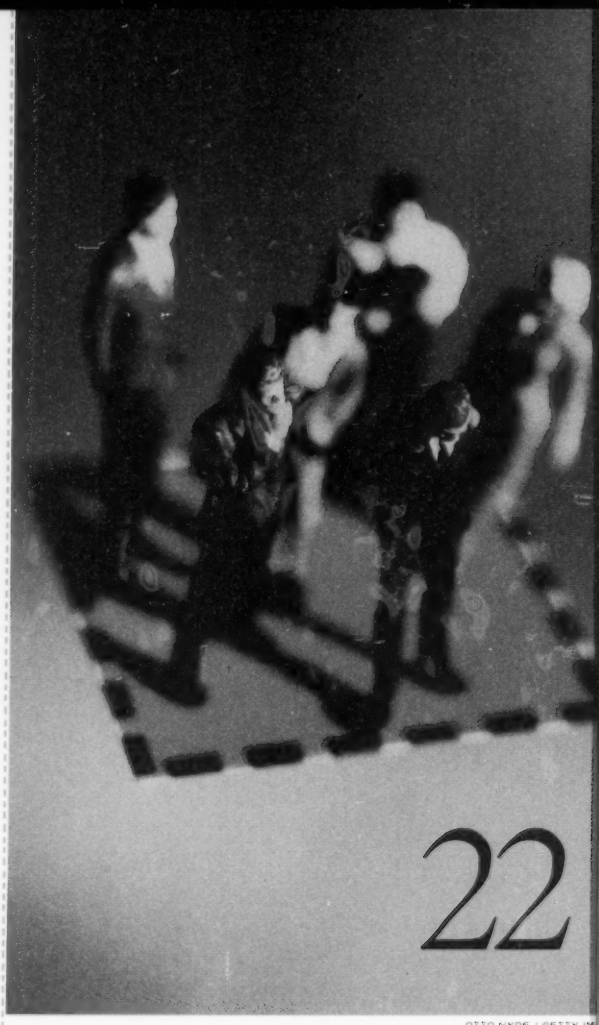

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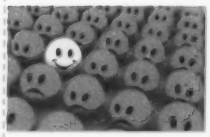

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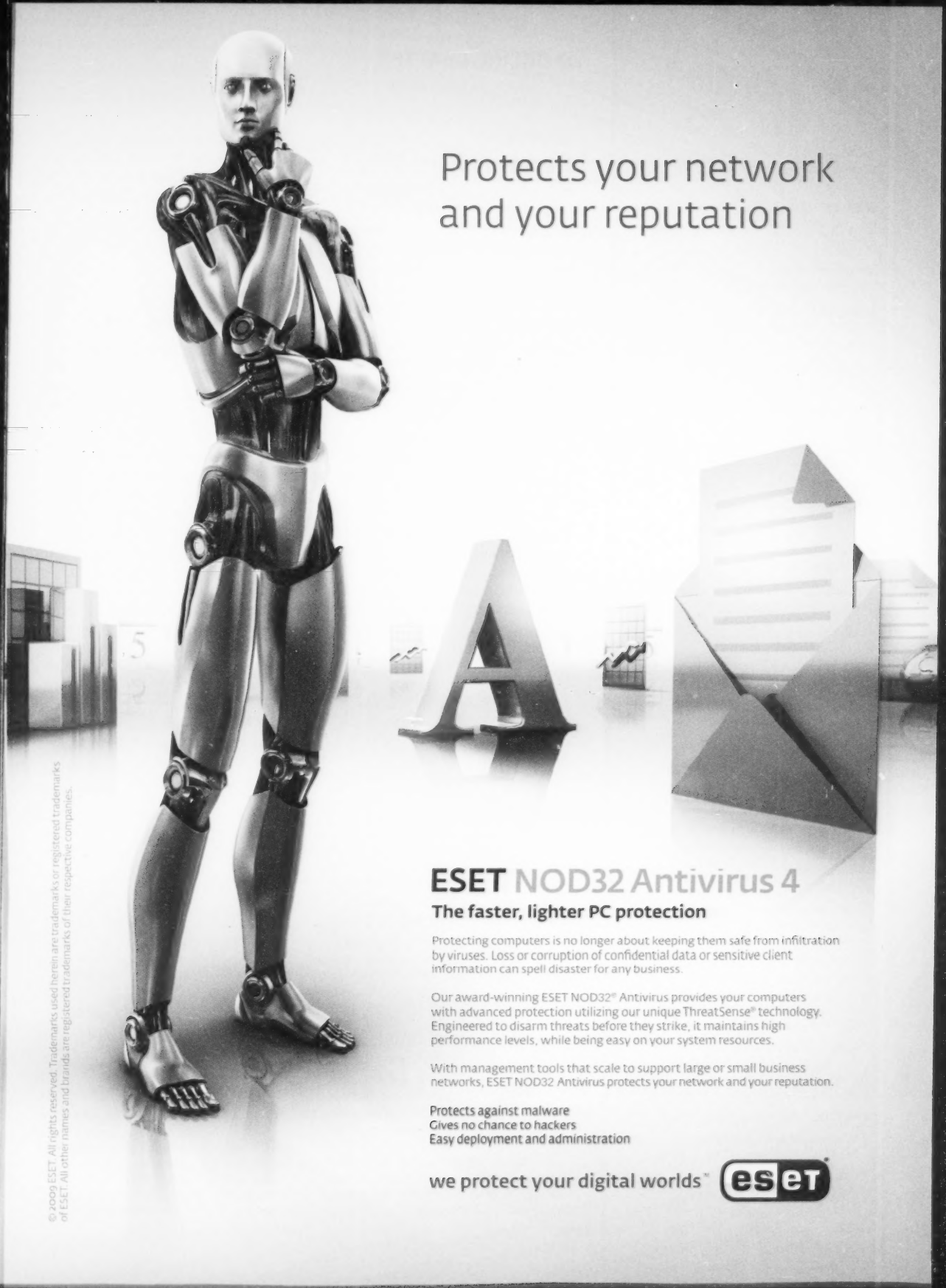
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■ ONLINE CHATTER

RESPONSES TO:

Desktop Linux: Why You Shouldn't Care

May 18, 2009

I had no issues installing Ubuntu 9.04 to my desktop, and using Synaptic to install software is a snap. So please tell me why my experience is different than yours. Perhaps what you mean is that you can't install Windows software. There you are correct. Wine will not run all Microsoft software. But as long as you use software from the Ubuntu repositories, there should be no problem. Besides, Ubuntu comes with a host of software ready to go.

I wish journalists would educate the public better. Brash generalizations are misleading. Why don't you just say that Linux is not Windows, that Linux can run some but not all Windows software, and if you try that you will run into problems?
■ **Submitted by:** *Fernie*

I have no problems installing or updating software. But I do agree with Preston Gralla that too many distributions, too many package managers, and too many, well, choices confuse potential users. This flexibility is one of Linux's greatest advantages, and yet without a unified "look and feel," it will be difficult to achieve a significant market share.
■ **Submitted by:** *Roszyk*

RESPONSE TO:

In Recession, Take Time to Save Time

May 18, 2009

In theory, author Sharon Machlis is correct. Unfortunately, it is rare that management incents such behavior, let alone rewards it. As the fear of job loss increases, the willingness to take chances (read invest time in investigating and developing more productive approaches) decreases.

What Ms. Machlis is advocating rarely takes place in the best of times. It doesn't seem realistic that corporate-think will change when the man or woman in the next cubicle might be your replacement.
■ **Submitted by:** *Mark*

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Smart and Cheap: BI on a Budget

You don't need new tools to gain insight into your business. Here are eight ways to make the most of what you already have.

Rechargeable Batteries Make Small Advances

Silver-zinc and other newer chemistries promise some relief, but progress remains slow.

IT Gets Ready for the Recovery

Don't just sit there – now's the time to position your IT department to own the economic upturn when it comes around.

The FTC Should Investigate Mac Security

Ira Winkler says Apple's ads make claims that could mislead users.

If You Want the Right Job, Ask the Right Questions

And if your questions elicit "the look," run away as politely as possible.

City 2.0

No, we don't have flying cars just yet. But the city of tomorrow is closer than you think, thanks to ubiquitous wireless networks, the smart energy grid and municipal social networks – all of which are definitely ready.

News Digest

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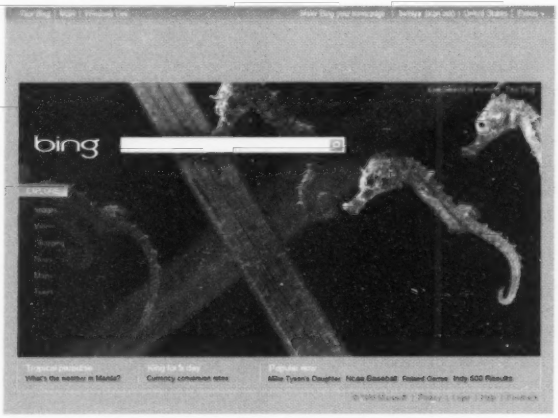
THE WEEK AHEAD

MONDAY: The annual *Computerworld* Honors Program awards ceremony takes place in Washington.

MONDAY: The 12th annual IEEE International Interconnect Technology Conference, sponsored by the IEEE Electron Devices Society and the Japan Society of Applied Physics, opens in Sapporo, Japan.

TUESDAY: Sun Microsystems' annual JavaOne Conference opens in San Francisco and continues through Friday.



The Bing search tool's official launch is slated for Wednesday.

INTERNET TECHNOLOGIES

The Search War Is On: Microsoft Unveils Bing

AFTER WEEKS of speculation, Microsoft Corp. CEO Steve Ballmer last week took the wraps off the company's new search site, called Bing, at *The Wall Street Journal*'s All Things Digital conference in Carlsbad, Calif.

The long-awaited upgrade to Live Search comes with a phalanx of related services, such as Bing Travel, Bing Cashback and Bing Maps for Enterprise. Paired with the company's legendary marketing muscle, those services should help Microsoft take on search behemoth Google Inc., analysts said.

Microsoft officials called the new offering, code-named Kumo, a "decision engine" designed to help people search the Web more intelligently and to simplify everyday tasks such as getting directions. The tool also makes it easier for users to organize search results according to their preferences, they said.

"Today, search engines do a decent job of helping people navigate the Web and find information, but they don't do a very good job of enabling people to use the information they find," Ballmer said.

"Microsoft has really trailed miserably the Google success in the search space," said Hadley Reynolds, an analyst at IDC. "They're taking on changing people's expectations about what using search should be." The Bing user interface alone is enough to make a lot of people take notice, he added.

But Stephen Arnold, president of Arnold Information Technology in Harrods Creek, Ky., said that Microsoft should have done more to differentiate Bing from Google's search technology.

"You just can't do something as good [as] or a little better than Google," Arnold said. Microsoft should have extended the technology to support "fundamentally new queries: How authoritative is a person? Who touched a document or changed it? How much can I trust this answer? Next-generation search will allow that type of processing. [Bing] does not."

The analysts agreed that Google has been preparing for a push by competitors like Microsoft and Yahoo Inc., or from well-regarded new technologies like the WolframAlpha fact engine unveiled in mid-May.

"Google has been adding enhancements and [is] constantly adjusting things in the background," Reynolds said.

— Sharon Gaudin

MOBILE & WIRELESS

Group Creates iPhone Security Benchmark

The Center for Internet Security last week released a security benchmark for Apple Inc.'s iPhone that it said could help IT managers better protect data stored on the device.

The benchmark, dubbed CIS Security Configuration Benchmark for Apple iPhone, includes 20 recommendations for system settings, Safari settings and iPhone Configuration Utility settings, said a CIS spokeswoman. The benchmark also includes instructions on securely erasing data and creating strong passwords.

Blake Frantz, chief technology officer at Hershey, Pa.-based CIS, said the iPhone presents "security challenges" for enterprises. Nonetheless, some large companies, such as Kraft Foods Inc. and Oracle Corp., have widely adopted the iPhone for business use. Others, such as Bank of America Corp., have held off supporting the iPhone, citing security concerns.

– MATT HAMBLEN

FOTOLIA / JULIA

CLOUD COMPUTING

Fed CIOs Look for Signs Of Opportunity in Cloud

WASHINGTON

ALTHOUGH TOP federal IT officials say they see value in cloud computing services, many are holding off on widespread use of the technology until vendors can adapt their offerings to account for unique government needs and budget processes.

For example, said Chris Kemp, CIO at NASA's Ames Research Center in Sunnyvale, Calif., many cloud computing vendors host tools on a small cluster of computers, whereas NASA often needs massive clusters to perform scientific research, "We operate at science scale, not enterprise application scale," Kemp said at an IT budget forum here last month.

And many agencies are still working to figure out exactly how to fashion government contracts covering the use of cloud computing services, said Doug Bourgeois, director of the National Business Center at the U.S. Department of the Interior. The center, which provides business services to multiple federal agencies, hopes to offer cloud computing services one day but needs more government-savvy contracts than vendors offer now, he added.

"How can the private-sector infrastructure providers provide me with a business model that's pay-as-you-go?" he said. "My customers are only going to pay for what they can use. I need to purchase infrastructure and technology under the same model, so it's truly a shared-risk partnership."

Radha Sekar, assistant deputy undersecretary of the defense comptroller for financial management in the Department of Defense, added that the federal budget process isn't geared toward purchasing computing power on an as-you-need-it basis. Thus vendors of hosted services need to educate lawmakers about the benefits, she said.

Despite the hurdles, the IT managers said cloud computing could prove to be a boon to their agencies.

The advantages of cloud computing "are so compelling, I don't think there's any going back," added Casey Coleman, CIO of the General Services Administration.

— Grant Gross, IDG News Service

Short Takes

- A federal jury in Texas found Microsoft Corp. guilty of infringing on software patents owned by i4i Inc. Microsoft was ordered to pay the maker of document management tools $200 million. The software vendor plans to appeal.
- Google Inc. released an early version of its Wave collaboration and communication tool to developers. Details were sketchy, but Google said the tool offers a combination of e-mail, instant-messaging, blogging, wiki, multimedia and document-sharing features.
- Dell Inc. reported that its first-quarter profits fell 63%, to $290 million, because of declining PC sales and $185 million in restructuring charges. Sales for the period totaled $12.3 billion, 23% lower than last year.
- NetApp Inc. has agreed to acquire Data Domain Inc., a maker of disk-based backup products that use data de-duplication technology. The $1.5 billion deal is expected to close this summer.

SECURITY

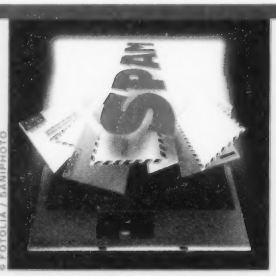
Spam Finds New Paths Into Corporate Nets

UNSOLICITED E-MAIL accounted for 90.4% of all messages received on corporate networks during April, an increase of 5.1% from a month earlier, according to a report released May 26 by Symantec Corp.'s MessageLabs Intelligence unit.

The monthly MessageLabs report on threat trends also found that nearly 58% of all spam can be traced to botnets.

Adam O'Donnell, a researcher at Cloudmark Inc., a provider of antispam tools, noted that in addition to using botnets, spammers in recent months have been experimenting with a new way to sneak unwanted e-mail past corporate filters.

Often, he said, a spammer will rent legitimate network



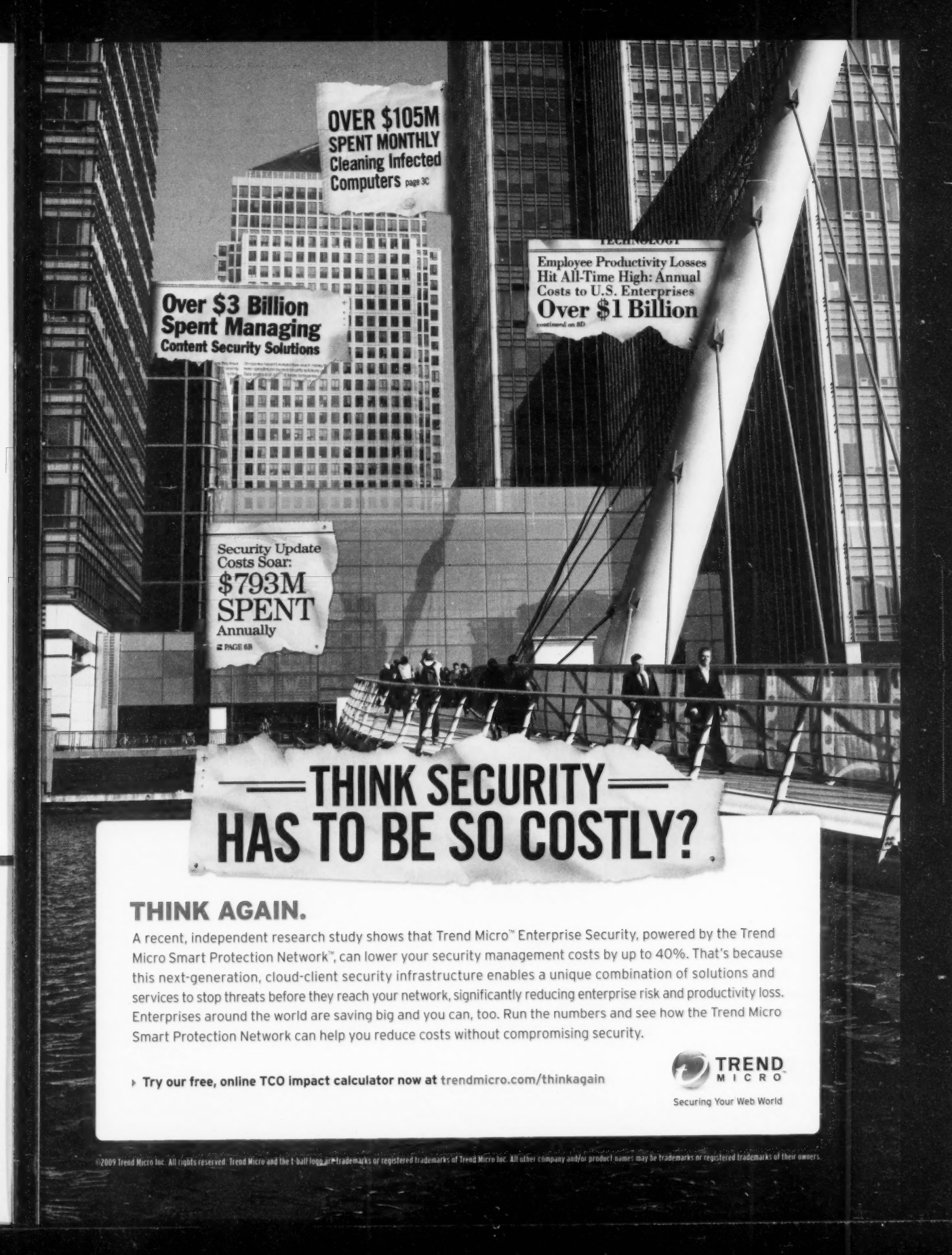
SHUTTERSTOCK / MARIUSZ BLACH

services, often in an Eastern European country, and then blast a large amount of spam at the network of a specific ISP. The idea is to push as many messages as possible onto the network before any kind of filtering software detects the incident. O'Donnell estimates that hundreds of thousands of such messages are sent each day without detection.

Social networks are also becoming an increasingly important tool for spammers.

Security experts note that social-networking spam can't be filtered at the corporate firewall and appears to come from friends of the recipients.

– ROBERT McMILLAN, IDG NEWS SERVICE



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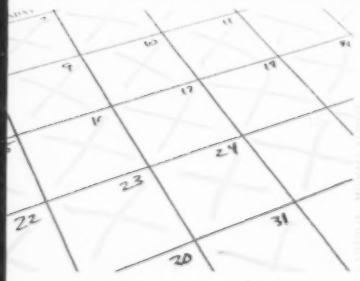
HARDWARE

Intel Delays Itanium Server Chip Till 2010



INTEL CORP. has once again delayed the release of its next-generation Itanium server processor to develop undisclosed "application scalability" enhancements.

The schedule set May 21 calls for the server chip, code-named Tukwila, to ship in the first quarter of 2010.

Tukwila had initially been slated for release early this year, but in February the company announced that it would have to delay it until mid-2009 in order to add a faster interconnect and support for new technologies like DDR3 memory.

A spokesman said the latest updates will be designed to speed the performance of highly threaded workloads.

The quad-core, 64-bit Itanium processor line is designed mainly for mainframe-based applications that require significant memory bandwidth.

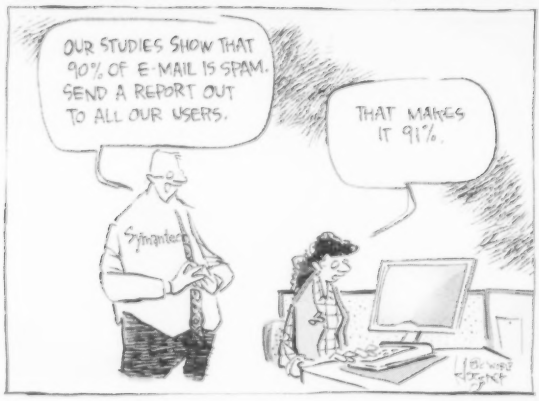
Jim McGregor, an analyst at In-Stat, said the design changes may have been requested by Hewlett-Packard Co., the primary user of Itanium chips. "The Itanium processor is pretty much a custom solution for HP," McGregor said. "HP has a huge investment in this, and they buy most of the processors."

Gordon Haff, an analyst at Illuminata Inc., said the latest delay could affect HP's ability to win new customers as competitive products like IBM's Power processors continue "firing on all cylinders."

During a webcast for investors last week, Intel CEO Paul Otellini said the Itanium processor business should get a boost from Oracle Corp.'s acquisition of Sun Microsystems Inc., developer of the rival Sparc chip. Otellini cited potential uncertainty surrounding the future of the Sparc processor line despite Oracle CEO Larry Ellison's pledge to stay in the hardware business and increase spending on Sparc development.

— Agam Shah, IDG News Service

BETWEEN THE LINES *By John Klossner*



BENCHMARKS LAST WEEK

VMware Inc. agreed to buy a 5% stake in Terremark Worldwide Inc. for about $20 million. Miami-based Terremark is a provider of collocation and managed IT services that use VMware's virtualization software.

Time Warner Inc. announced that it will spin off its struggling AOL LLC unit.

10 YEARS AGO: The U.S. Department of Justice agreed to approve Computer Associates' $3.5 billion purchase of Platinum Technology International Inc. if CA divested itself of six products for managing mainframe systems.

Global Dispatches

Russian Firm Buys Stake in Facebook

MOSCOW – Digital Sky Technologies last week acquired a 1.96% stake in Facebook Inc. for $200 million (U.S.).

The Moscow-based investment firm said the deal gives privately held Facebook a valuation of $10 billion, one-third less than its value when it sold a 1.6% stake to Microsoft Corp. for $240 million in October 2007.

Digital Sky has also agreed to buy "at least" $100 million in Facebook stock from the social networking company's common stockholders – an investment that Facebook said would "facilitate liquidity for current and former employees' vested shares in the company."

Digital Sky won't gain a seat on Facebook's board of directors.

Juan Carlos Perez, *IDG News Service*

Red Hat Sues to Void Microsoft Pact

BERN, Switzerland – Red Hat Inc. last week said it has filed a lawsuit in the Federal Administrative Court of Switzerland seeking the cancellation of a three-year no-bid contract that the Swiss Federal Bureau for Buildings and Logistics awarded to Microsoft Corp.

The contract, valued at 42 million Swiss francs ($38 million U.S.), calls for Microsoft to supply the agency with desktop software licenses, applications for clients and servers, and maintenance and third-level support.

While Swiss law allows no-bid contracts when an agency determines that only one company can meet its technical specifications, Red Hat contends that it can provide an alternative offering.

Red Hat said 16 companies are backing its effort.

Peter Sayer, *IDG News Service*

BRIEFLY NOTED

Sean Finnan has resigned as managing director of Electronic Data Systems Corp.'s U.K. operation to join IBM's Global Services unit, reportedly as global deal-maker in the unit's Zurich office. Finnan had worked at EDS since 1985.

Leo King, *Computerworld UK*

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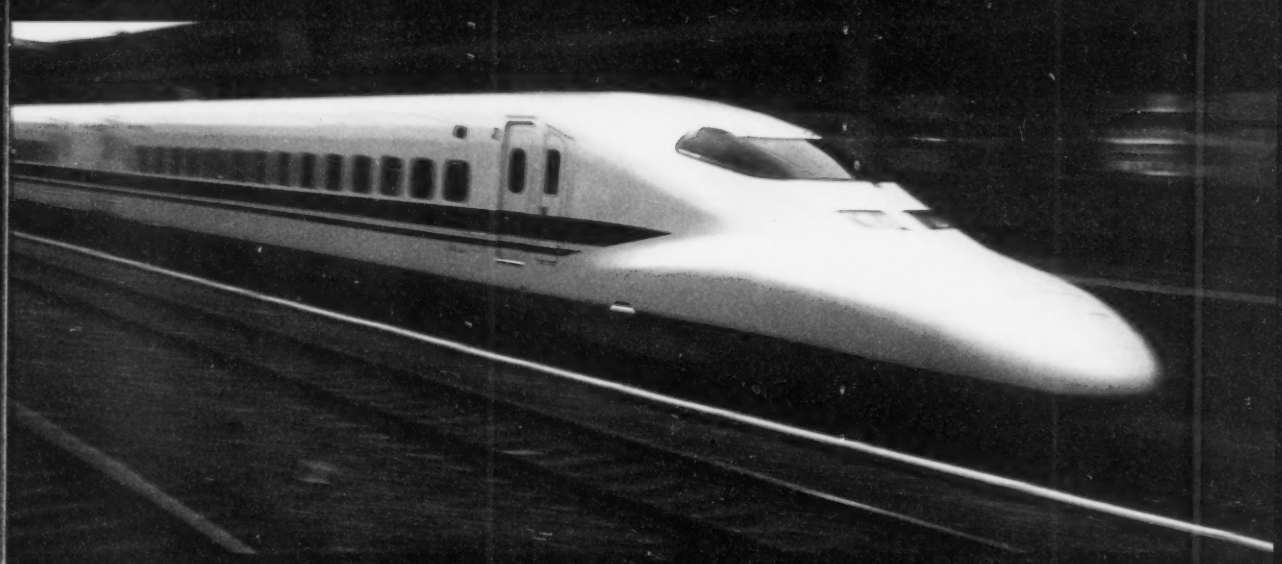

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Budget Woes Could Boost Government Offshoring

Political pressure may not keep outsourcing in check as state tax revenues plummet.

By Patrick Thibodeau

IN 2005, the New Jersey legislature tried to put the brakes on IT offshoring by passing a law requiring that all state work be performed in the U.S. It was one of the most restrictive measures ever passed by a state. But try as it might, New Jersey couldn't escape the impact of globalization.

For instance, IT contracting firms that use H-1B workers are among those that bid for the state's IT work. Adel Ebeid, New Jersey's chief technology officer, believes that such contractors are able to offer competitive bids in part because they use H-1B workers who "are willing to settle for an hourly rate that would not be tolerated by other folks."

"I think the availability of H-1B visas is driving down hourly wages," he said.

New Jersey's offshore restrictions are atypical among state governments. Indeed, most states don't bar the offshoring of IT work but avoid it because of political pressure.

There are exceptions, though. Virginia, for instance, has signed contracts with offshore vendors for application development work. And some analysts believe that other states will be more receptive to offshore outsourcing as budget pressures increase.

New Jersey's offshoring law doesn't allow it to exclude people who are legally working in the U.S. The state awards contracts based on service and price, officials said.

> **"I think the availability of H-1B visas is driving down hourly wages."**
>
> **ADEL EBEID,** CHIEF TECHNOLOGY OFFICER, NEW JERSEY STATE GOVERNMENT

The judiciary branch of the state's government last year awarded a services contract to Astir IT Solutions Inc., a South Plainfield, N.J.-based firm that received federal government approval for 160 H-1B visas between 2006 and 2008. Astir officials were not available for comment.

While the New Jersey Judiciary does use H-1B workers, it claims that it wouldn't offshore work under any circumstances. CIO Jim Rebo said that the court system's IT projects couldn't be run offshore even before the 2005 legislation for security reasons. "We have almost never contracted to do work off-site, let alone offshore," he said.

MONEY TALKS

Ebeid said workers with H-1B visas are particularly prevalent on application development jobs, and contractors on such projects may have rates of $65 to $70 per hour, which is less than the hourly rate generally paid to U.S. workers.

But can states resist outsourcing in the long run as they try to cut costs? Wipro Ltd., a Bangalore, India-based outsourcer, believes IT departments can save money using its remote infrastructure managed services.

Continued on page 12

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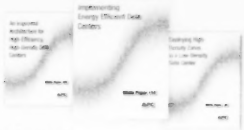

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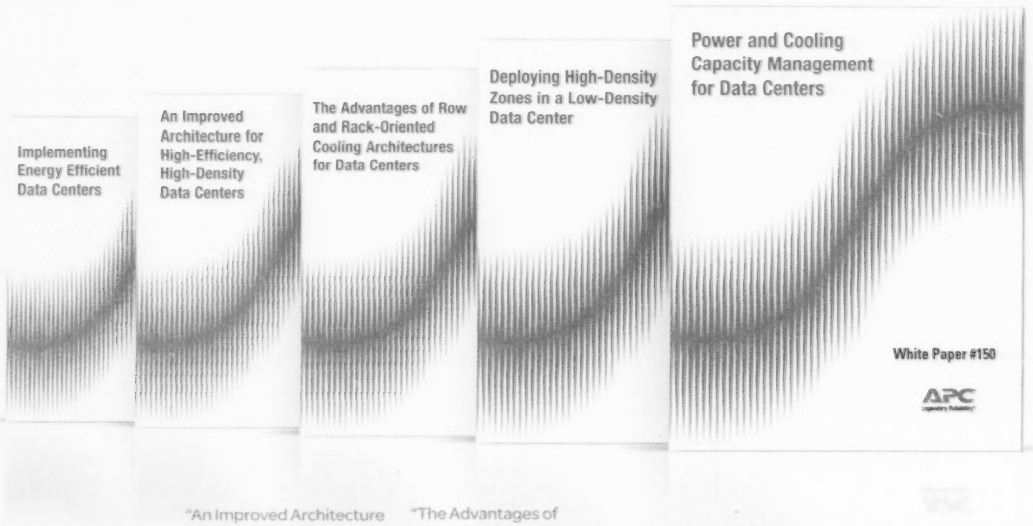
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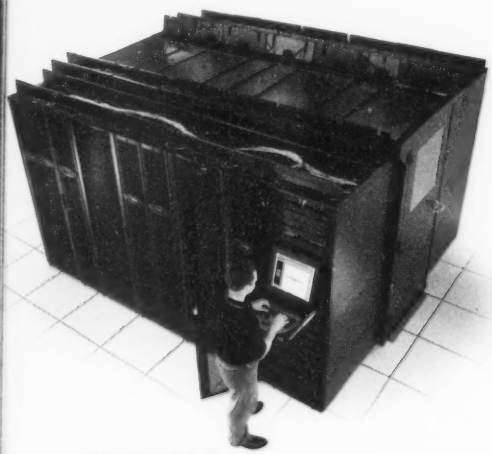

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> **"We have almost never contracted to do work off-site, let alone offshore.**
>
> **JIM REBO,** CIO, NEW JERSEY JUDICIARY

Continued from page 10

The service, which is similar to ones offered by other outsourcers, generally includes the remote monitoring and management of most IT assets, including data centers, networks, security systems and application software. Typically, technology infrastructure outsourcers keep the data centers in the U.S., while the IT operations are mostly handled offshore.

GK Prasanna, senior vice president of technology infrastructure services at Wipro, estimates that such offerings can cut infrastructure costs by as much as 25% over the length of a five-to-seven-year contract.

Prasanna said that many Wipro customers "no longer feel uncomfortable" with outsourcing infrastructure services, though observers suggest that state governments may still be reluctant to embrace the model.

Gartner Inc. estimates that the remote infrastructure management services market, which now stands at about $17 billion worldwide, will grow by about 21% annually through 2012.

STRINGS ATTACHED

In 2005, the state of Virginia signed a 10-year, $2 billion agreement to outsource its IT infrastructure. But the deal required that the contractor, Los Angeles-based Northrop Grumman Corp., keep the data centers — and IT personnel — used to fulfill the contract in facilities located within the state. In fact, approximately two-thirds of Virginia's 850 IT workers took in-state jobs with Northrop Grumman.

Under the contract, Northrop Grumman runs the state's data centers, help desks and other IT operations.

When the agreement was signed, Virginia officials said that about half of the state's IT equipment was more than eight years old and the contract was a way to get a massive upgrade and to consolidate IT operations without having launch a 10-year project to replace the older systems. The state had estimated the replacement costs at about $200 million.

Chris Dixon, an analyst at Input, a Reston, Va.-based government market research firm, said that Virginia remains a "test case" on infrastructure outsourcing.

However, he believes that as more states move to consolidate IT operations, interest in infrastructure outsourcing will increase.

Meanwhile, some of President Barack Obama's appointees to top federal IT posts appear open to the use of offshore resources for at least some government projects.

Take Aneesh Chopra, Obama's pick to be the nation's first-ever CTO, for example. Chopra was Virginia's secretary of technology when the state signed a 2007 outsourcing contract for content management development with HCL America Inc., a unit of Noida, India-based outsourcing firm HCL Technologies Ltd.

At the time, the Virginia Information Technologies Agency said it would allow work under the contract to be performed at HCL facilities in India. The officials said that the contract was awarded to HCL because it offered the "best value" compared with competing bidders.

The earlier contract with Northrop Grumman was signed just prior to Chopra's appointment as the state's secretary of technology.

The other top technology officer appointed by Obama, federal CIO Vivek Kundra, signed a similar deal with Advanced Integrated Technologies Corp., a Washington-based company with operations in India, in his previous position as CTO of the District of Columbia.

Advanced Integrated Technologies and a city employee were implicated in an alleged bribery scheme in March, but the White House concluded that Kundra was not involved, and he retained his federal post.

KEEPING IT LOCAL

Outsourcing is still an uncommon choice for state governments, which tend to award contracts to in-state businesses that may or may not use H-1B workers, Dixon said. "They prefer that money to go back into the local economy," he added.

New Jersey's anti-offshoring law can help keep money in the local economy, and the state's IT workers employed, said New Jersey Democratic State Sen. Shirley Turner, who authored the 2005 law. Turner said in an interview that she wrote the legislation after watching vendors set up IT shops overseas. She also noted that she had spoken with programmers whose jobs had been outsourced or were lost to workers with H-1B visas who were paid less.

Critics of such legislation argue that it could lead other countries to make similar moves, which could increase IT costs and eat up tax revenue that could be used on other projects.

Ebeid contends that under the New Jersey law, the state is paying a fair price for work that's awarded to contractors operating in the U.S. Ebeid also said that he believes offshoring wouldn't be considerably cheaper — though he conceded that he couldn't provide data to back up that assertion, because the state doesn't seek bids from outsourcers looking to take work offshore.

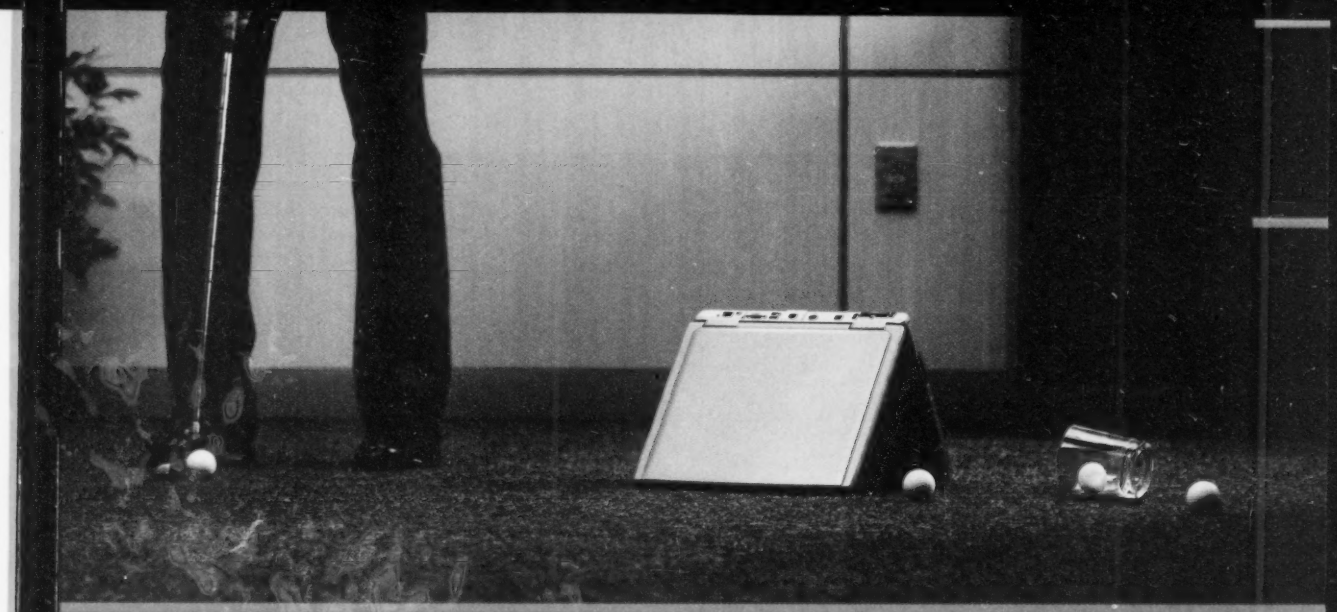
He noted, however, that the state continues to select IT vendors based both on technical competence and the projected cost to taxpayers.

Today, observers say that it's difficult to know exactly how much public-sector IT work goes offshore. For example, support services included with packaged application products purchased by a state may be handled offshore.

Meanwhile, the TechServe Alliance (formerly the National Association of Computer Consultants) analyzed federal labor data on IT-related occupations and found that IT employment peaked last November at 4.06 million jobs. By the end of April, that figure had declined to 3.87 million, the alliance said.

Companies "are still cutting, and I think there will be some more cuts," said Steve Watson, international chairman and managing director of recruiting firm Stanton Chase International in Dallas.

But Watson also noted that he's optimistic that hiring will resume by the end of 2009 due to a pent-up demand for corporate and government IT projects. ■



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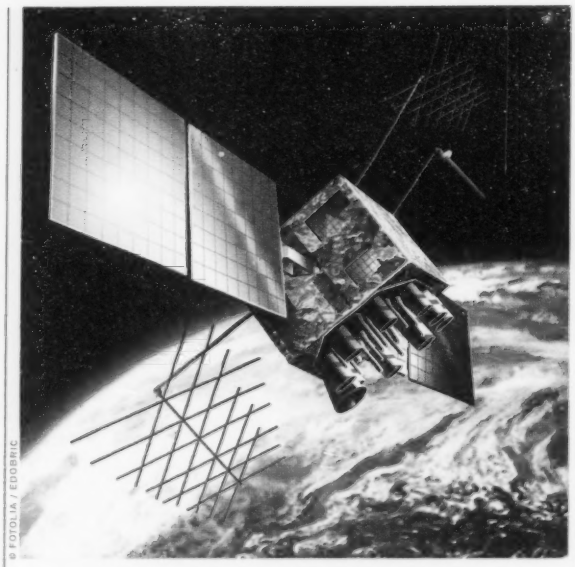

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AIR FORCE DISPUTES TALK OF GPS FAILURE

GAO warns that the service could face interruptions.

By Matt Hamblen

THE U.S. AIR FORCE late last month disputed a General Accountability Office report concluding that the Global Positioning System used by the military and millions of motorists worldwide may be in danger of disruption unless aging satellites are replaced quickly.

"The GPS will not go down," said Col. Dave Buckman, in a forum hosted late last month on Twitter Inc.'s social network. Buckman, command lead for position, navigation and timing at the Air Force Space Command in Colorado Springs, is a subject-matter expert on the GPS satellite navigation program, which dates back to the 1970s.

The program is funded by the U.S. Department of Defense; the Air Force is responsible for acquiring satellites and other equipment for the system. The U.S. government offers the GPS navigation service to commercial users at no charge.

Buckman acknowledged that there is some risk of degraded performance as a result of delays in launching new satellites, but he contended that the service is not in danger of failing. "There is a potential risk, but GPS isn't falling out of the sky. We have plans to mitigate risk and prevent a gap in coverage," he added.

In a report issued early last month, the GAO said that it is uncertain whether the Air Force can launch new satellites in time to replace older ones that are starting to fail. The report suggests that as early as next year, the number of satellites used for the service could fall below 24, which is the number of satellites necessary "to provide the level of GPS service the U.S. government commits to." The report noted that the next new satellite is set to be launched in November, some three years behind the Air Force's original schedule.

There are now 30 operational GPS satellites, according to the Air Force.

The GAO report concluded that there is an 80% chance that the Air Force will be able to maintain the 24-satellite constellation required for full GPS service at all times between 2010 and 2014. Falling below the 24-satellite threshold could have a "wide-ranging impact" on GPS users, Christina Chaplain, director of acquisition and sourcing management at the GAO, told a subcommittee of the U.S. House Committee on Oversight and Government Reform on May 7, the day the report was released.

She said the military especially could face significant problems if GPS performance lags, noting that the accuracy of precision-guided munitions depends on a full implementation of the technology. Degraded service would require that the military use larger or greater numbers of munitions to hit the same target, she added.

Also, GPS satellite problems could affect the 911 emergency telephone system or force airlines to delay, cancel or reroute flights, the GAO said.

In a statement responding to the GAO report, Gen. C. Robert Kehler, commander of the Air Force Space Command, said he has "high confidence" that the number of GPS satellites will not drop below 24.

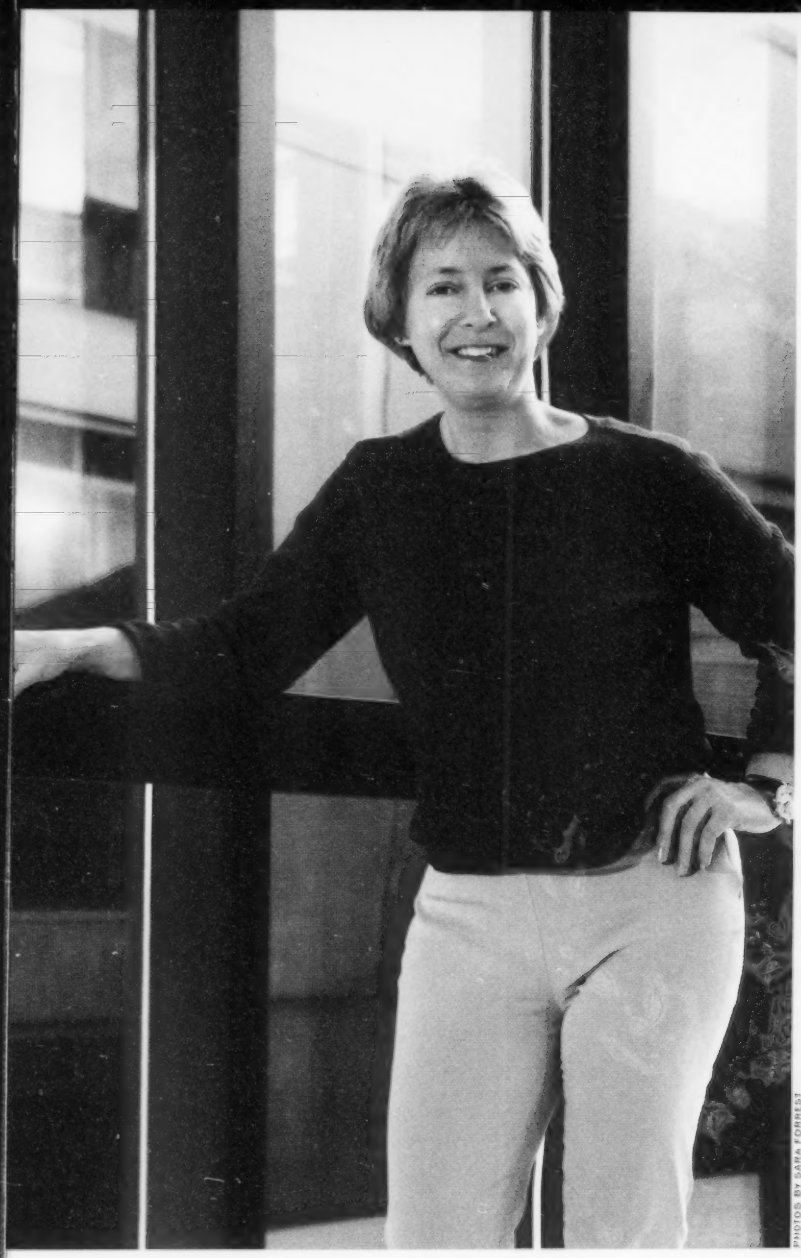
Wireless carriers that provide GPS service to customers are aware of the state of the Global Positioning System and of the concerns raised by the GAO, said John Walls, vice president of public affairs at CTIA, a Washington-based industry group that represents many major wireless carriers.

Walls estimated the chances of a satellite problem at about 5% and suggested that several satellites could be out of service "without causing significant problems for most wireless applications."

Jack Gold, a wireless analyst at J.Gold Associates LLC, said that while most drivers with GPS devices could get the data they need with only four GPS satellites, the military needs at least 24 to make precise calculations.

The GAO report will remind people of the importance of GPS technology, he reasoned, but the public might get the impression that the problems are more serious than they really are. "We have to be careful we don't overstate the case," he said.

The GAO recommended that a single authority be created by the Department of Defense to oversee the acquisition and development of all GPS technology, including satellites and ground control systems. The DOD agrees with the recommendation, the GAO said. ■



PHOTOS BY SARA FORREST

■ THE GRILL

Caroline Ross

An MIT professor with a penchant for **tiny technologies** sees big opportunities for **nanoscale magnets** to enhance **computer performance.**

Dossier

Name: Caroline Ross

Title: Professor

Organization: Department of Materials Science and Engineering, MIT

Location: Cambridge, Mass.

Favorite technology: "My favorite toy has to be my Mac."

Dream dinner guests: Family and friends.

What makes you laugh? "Monty Python, and NPR's *Wait Wait . . . Don't Tell Me!*"

Favorite book: "I have several favorites; I mostly read history, such as Barbara Tuchman's books, and stories like the Sherlock Holmes books."

Working at a microscopic level, Caroline Ross actually creates and modifies MRAM, or magnetoresistive random-access memory. When we store our birthday photos and thesis papers on our PCs, our thought process usually doesn't go further than hitting the Save button. We put a large amount of trust in our computers' storage systems. Using the science of magnets, Ross, a professor at MIT, is modifying RAM to help increase the performance of our favorite machines.

What is a thin film? A thin film is just a thin layer of something — a metal or a semiconductor or an insulator, for example. I work mostly with thin layers of magnetic metals such as cobalt, or magnetic oxides such as iron oxide — rust. Multilayer magnetic thin films are particularly interesting because their electrical resistance depends on their magnetization state. This phenomenon, called magnetoresistance, allows us to use electrical measurements to detect the magnetic configuration of the thin film and therefore to read back data stored in the film.

How is the science of magnets changing the way computers will store data in the future? Computers already use magnetism to store data; the hard disk in your computer stores data as mag-

Continued on page 18

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“It is likely that MRAM will continue to move into niche markets as the manufacturing processes improve. We will not see it in large-scale use until the cost decreases.

Continued from page 15

netization patterns in a magnetic thin film. However, hard disks are relatively large, and the moving parts can lead to reliability problems. MRAMs provide an alternative data storage mechanism that does not have any moving parts and that can easily be integrated into computers. There are some new discoveries in magnetism that are very important in MRAM — for example, current-induced magnetization reversal to write the bits, magnetoresistance to read back the bits.

How are nanomagnets involved with MRAM? A nanomagnet is a tiny magnet, with a length less than a micrometer. It turns out that when magnets are shrunk to small dimensions, they behave differently compared to macroscopic magnets. Nanoscale magnets often have very simple magnetization states, which makes them well suited to storing digital data. So in MRAM, each bit of data is stored in one nanomagnet, which is addressed using one transistor.

What's different about MRAM? MRAM is special because it is nonvolatile, fast and dense. Nonvolatile means it stores the data even when the power is turned off — unlike the DRAM in your computer, which loses its data unless it is constantly refreshed. There are other types of nonvolatile memory — for example, flash memory — but MRAM has advantages over flash in terms of its speed and its endurance.

What does this mean for computers? Some people call MRAM a “universal memory” because it could replace all the memory in your computer — the DRAM, SRAM, flash and hard drive — with one type of memory. Probably the most obvious difference would be that when you start up the computer, you would not need to wait for all the programs and data to be copied from the hard disk onto the RAM, so the computer would switch on instantly.

I understand that MRAM isn't commercially available yet. Do you foresee it in the mainstream market anytime soon? There are several commercial products. For example, Everspin, a spin-off from Freescale, sells products for industrial automation, storage systems and space systems. However, the market at the moment is very small compared to the market for other memories. It is likely that MRAM will continue to move into niche markets as the manufacturing processes improve. We will not see it in large-scale use until the cost decreases.

Where does your passion for this field of research come from? Did you want to change the world, or did you just kind of fall into it because you were good at math and science? I was always interested in making very tiny things. And magnetism on the small scale is fascinating, so this project represents a good combination.

How did you end up at MIT, and where were you before that? I'm from London. I did my B.A. and Ph.D. in Cambridge, U.K., and came to Harvard as a postdoctoral fellow. Then I worked in a hard disk company in California for six years as an engineer before coming to MIT.

What do you consider your greatest accomplishment thus far? In my work here, it is probably the development of new ways of creating small structures by taking advantage of self-assembly processes. This could allow us to keep reducing the size of integrated circuits and other devices.

Do you have any advice for young women just starting out in the field? There are certainly differences in how men and women are perceived. Science and engineering is stereotypically male, and when I worked in industry, I was the only female Ph.D. in the company when I joined. However, women are slowly making inroads, and I always try to encourage young women to go into science and engineering. It is a lot of fun.

What is enthralling about it? Can you elaborate on why you do this type of work and what motivates you? It is fun to decide what to study and to design an experiment to investigate it. It's fun to be the first person to know something. It's great to have a small group of students and postdocs working together so that new ideas come out of their collaborations.

When you're not changing the world one thin film at a time, what are you doing during your free time? I have a sailboat, which I race, and I do tae kwon do. But most of my time is spent with my 4-year-old daughter. I've been sailing for 20 years. As for tae kwon do, I've done it for about 20 years too, and yes, I'm a black belt.

— Interview by **Sara Forrest,** *a freelance photographer and writer in New York (studio@saraforrestphoto.com)*

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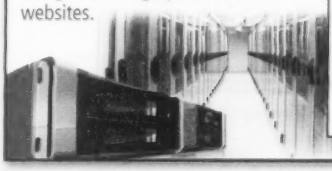

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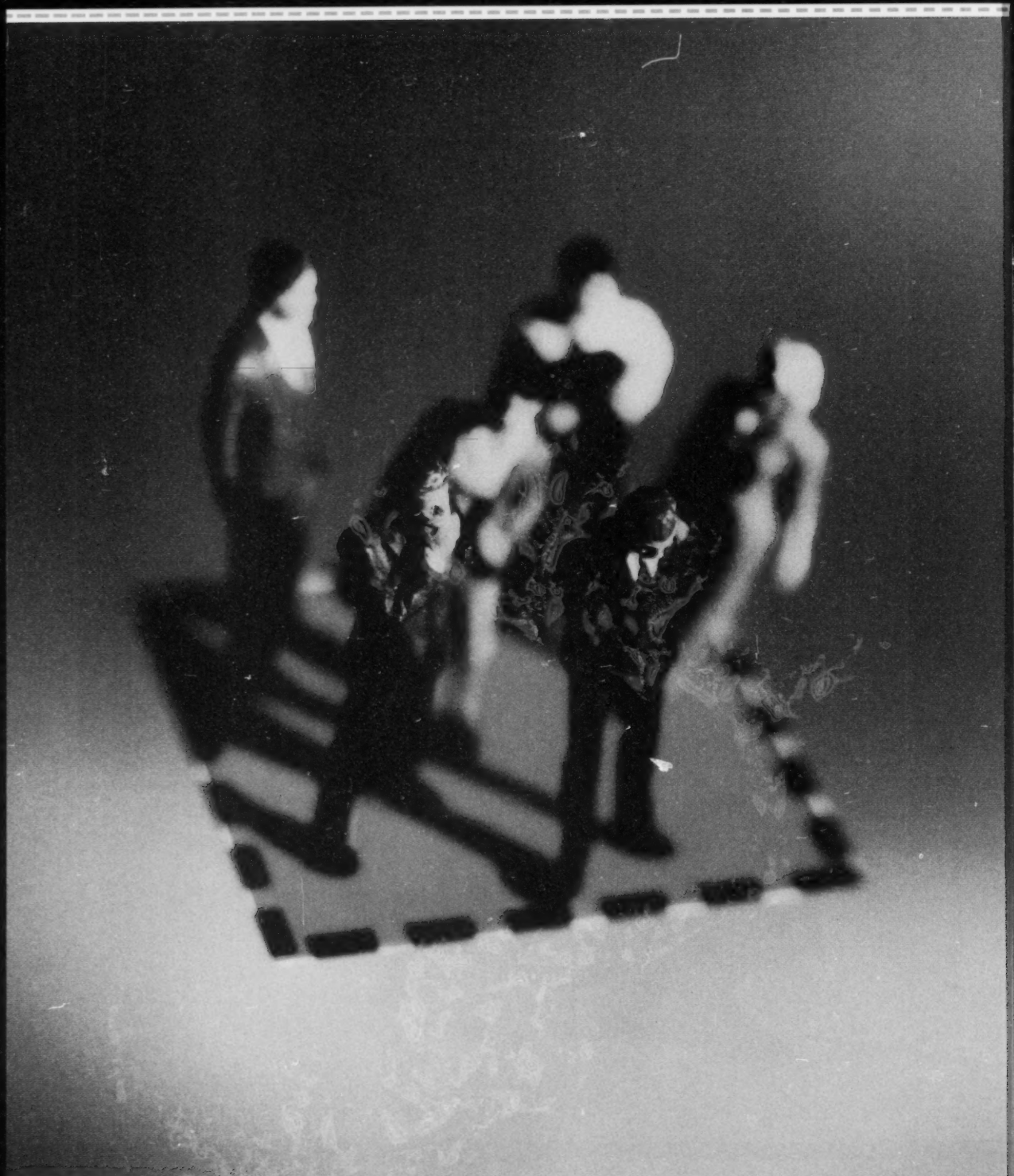


CAN YOU TRUST THE cloud?

Outages at a cloud computing service could hurt your business. The question is whether your in-house systems can do better. By Cindy Waxer

IN APRIL of last year, Satoshi Nakajima, founder of Washington-based Big Canvas Inc., was eagerly inviting new customers to subscribe to his company's flagship product, PhotoShare, which lets users swap Apple iPhone photos for free.

Three months later, Nakajima was extending those same subscribers heartfelt apologies.

His mea culpa wasn't in response to product glitches, poor customer service or any of the other growing pains known to plague start-ups. Rather, PhotoShare and its 50,000 subscribers (now 150,000 strong) had fallen victim to stormy weather in the cloud computing environment: a seven-hour outage on July 20 when Amazon.com Inc.'s S3 cloud service went down — for the second time in 2008.

Nakajima pays $900 a month for Amazon's cloud

PEERING INTO THE Cloud

Here are five questions you need answered before moving your business to the cloud:

1 How does my vendor define "good customer service"? Cutting-edge services are key, but you need to find out what a particular vendor considers "good" service and what that service includes, from refund policies to technical assistance.

2 How comfortable am I with my vendor's physical facilities? Part of the due-diligence process includes examining a vendor's facilities and paying attention to the processes around the maintenance of the building, as well as the vendor's equipment maintenance schedule and the number of people working in the building.

3 What types of service interruptions should I be prepared for? Sometimes a vendor will have to shut down a portion of its facility for renovations or equipment upgrades – activities that can significantly interrupt your cloud computing services. Find out how often a vendor plans to conduct maintenance checks and what kind of advance notice you can expect.

4 How quickly is my vendor growing? You need to know whether your vendor is technically capable of taking on a significant number of new subscribers without it impacting your service levels.

5 What follow-up procedures does my vendor have in place? Outages happen; the important issue is how quickly and effectively your vendor can get to the root of the problem.

– CINDY WAXER

computing services. He subscribes to the vendor's Elastic Compute Cloud (EC2) for flexible computing capacity and Simple Storage Service (S3) for unlimited data storage space, which Big Canvas uses to store customers' photos. As a result of the outage, brought on by what Amazon said were poorly communicating servers, Big Canvas lost photos belonging to 50 customers. Nakajima called each to apologize personally.

"We simply told them: 'The last photos you posted are gone. I'm sorry; either resubmit them — or forgive us," recalls Nakajima, formerly the lead software architect on Microsoft Windows.

Nakajima isn't the only business owner who's been forced to pick up the pieces after a cloud computing outage. In February, about 113 million Google Gmail subscribers had to wait patiently or turn to an alternate e-mail service when Google Inc.'s Web-based e-mail system went on the blink for several hours. And last month, 14% of Google Apps users faced slow service or interruptions because of a network traffic jam.

> **"A short outage of a mission-critical application could cost millions of dollars.**
>
> **JOHN SLOAN,** ANALYST, INFO-TECH RESEARCH GROUP

And last July 18, Apple's online cloud service, MobileMe, which synchronizes e-mail, contacts and calendar events, remained unavailable to users throughout much of the day, prompting disgruntled users to say things like "MAC.COM BLOWS!" on support forums.

Such snafus haven't stopped an increasing number companies from turning to cloud computing services for pay-as-you-go processing power and storage space that don't require an investment in IT infrastructure. Research firm IDC predicts that worldwide IT spending on cloud services will grow almost threefold by 2012, reaching $42 billion. But as dependency grows, so too do concerns about cloud computing's reliability and whether big-name vendors like Amazon, Google and Apple will accept responsibility for outages.

In a 2008 IDC survey of 244 CIOs and business executives, more than 63% of the respondents rated performance and availability as two of the top three challenges surrounding cloud computing services. And nearly 75% said they consider security to be a serious concern.

Small businesses like Big Canvas aren't the only ones sweating cloud computing's shortcomings. Although start-ups are often the hardest hit by outages, even the venerable *New York Times*, which uses S3 to store and deliver articles from its historical database, was down for the count when Amazon Web Services suffered a two-hour outage in February 2008.

"A short outage of a mission-critical application could cost millions of dollars," warns John Sloan, an analyst at Info-Tech Research Group, a market analysis firm in London, Ontario.

Who is responsible for picking up the check — and cleaning up the mess — is a prickly question for today's host of cloud computing providers, including Amazon, Google, Nirvanix, Salesforce.com, Akamai Technologies, XCalibre Communications and Rackspace Hosting. Part of the difficulty stems from the fact that few cloud providers offer service-level agreements (SLA) promising 99.99% uptime or rebates for excess downtime. And companies that insist on a guarantee of four-9s performance can expect to pay a hefty price.

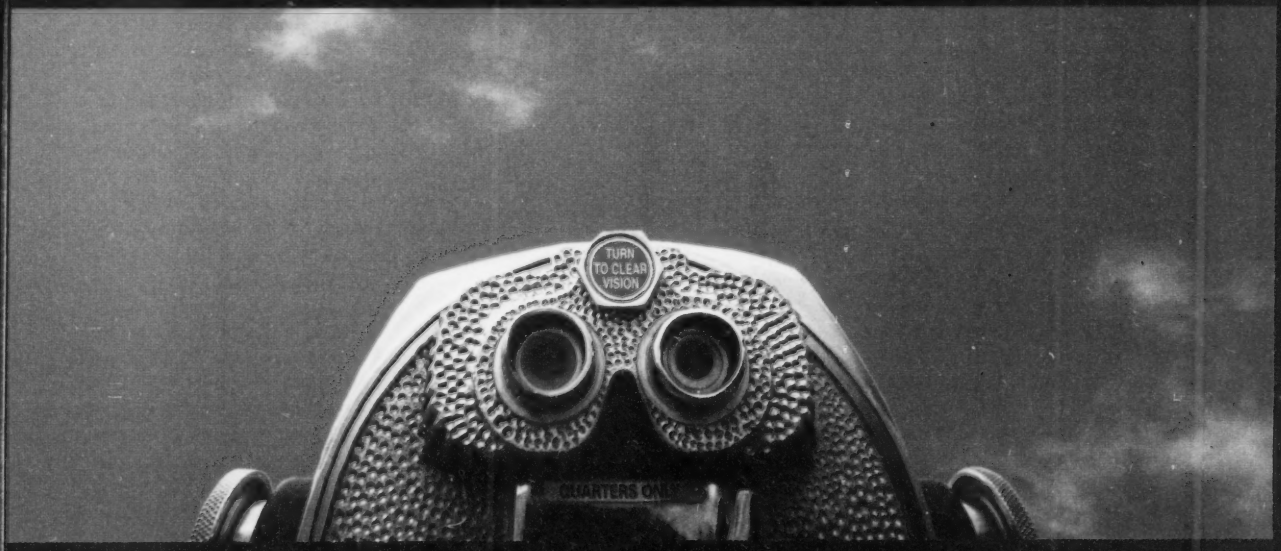
"In order to guarantee 99.99% service levels, a provider is likely to charge you more," says Sloan, adding that other trade-offs could include having to sign a multiyear contract with a provider.

THE FINE PRINT

Semantics can also come into play when assigning responsibility — and blame. Google's SLA, for example, reads, "The Google Apps SLA does not apply to . . . any performance issues: (i) caused by factors outside of Google's reasonable control." Whether poorly communicating servers or denial-of-service attacks qualify as outside of "Google's reasonable control" is a debate for ace legal teams — a luxury smaller businesses simply can't afford.

Continued on page 26

I.T. SERVICES
VISIBILITY: 100%
EFFICIENCY: UP 43%
PAYBACK: 9 MONTHS
VALUE: 100% CLEAR



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> **Most existing cloud contracts don't cover the fact that it's a loss-of-revenue issue for companies.**
>
> **R 'RAY' WANG,** ANALYST, FORRESTER RESEARCH INC.

Continued from page 24

When all is said and done, a cloud computing vendor's reputation and track record may be the best indicators of reliability. On the upside, many providers are getting better at keeping their customers informed of service outages. For example, in February Google unveiled its Google Apps Status Dashboard, which provides subscribers with an at-a-glance look at the current availability of applications such as Google Gmail, Video and Docs. Outages are flagged with a red "x," whereas uptime is denoted with a green check mark.

Some vendors are even willing to compensate certain customers for service disruptions. Google, for example, offered Google Apps Premier Edition paying customers a 15-day credit to make up for the service outage that occurred in February 2008. But not everyone receives vendors' largesse in equal measure. In the case of Big Canvas, Nakajima says, Amazon didn't charge the company for its seven hours of downtime — but that was a discount of less than 1% on its monthly bill.

"Vendors need to promise us 99.9% availability, and if they miss that number, then they should refund us for the whole month," he says.

That's not going to happen anytime soon, according to R 'Ray' Wang, an analyst at Forrester Research Inc. "Most existing cloud contracts don't cover the fact that it's a loss-of-revenue issue for companies," says Wang. "You'll receive credits for future service, but there's really no way to cover your losses."

Not everyone is crying foul over cloud computing providers' refund policies. Just ask Peter Sanchez. He's the founder of SmartJabber.com, a Los Angeles-based start-up that sells automated customer service software such as virtual chat agents to online retailers. Since its launch last April, SmartJabber has relied on Amazon S3 to store image files for chat windows, JavaScript files and Web site images. But last July, a major S3 outage prevented SmartJabber and its customers from accessing those files for more than six hours.

"Our customers' chat windows and Web site images weren't loading correctly, which ultimately makes their Web site look bad to visitors, so we had some complaints," recalls Sanchez.

Despite having received about 15 customer complaints, Sanchez is surprisingly laid-back about the ordeal, noting that he never even bothered to contact Amazon for a refund. As far as Sanchez is concerned, the occasional bout of downtime is a small price to pay for a storage service that costs just $35 a month — a fraction of the nearly $500 a month he'd have to spend to replicate Amazon's storage capabilities with in-house servers.

"As long as an SLA is available for everybody to read, and the vendor isn't trying to hide anything, then you either have to accept the agreement or find someone that you think can provide a better level of service," says Sanchez.

Nor does he subscribe to the notion that a cloud computing contract requires forfeiting complete control of your systems. Rather, Sanchez says that in the event of an outage, SmartJabber can offload the data it stores on S3 onto its own local storage servers in a matter of minutes. "It's not the best solution, but it's something that would keep us chugging along," he says.

Nakajima has a similar emergency plan. Today, as a precautionary measure, Big Canvas' EC2 server temporarily caches users' photos before transferring them to the S3 server.

Despite some complaints, in-house IT departments would be hard-pressed to outperform the service levels currently being met by many providers, including Amazon and Google — occasional outages and all.

Says Wang, "If you were to compare the amount of uptime that the cloud providers are delivering and what's being delivered by your own internal IT teams, you'll find out that the external ones are doing a much better job, mostly because they're under a higher level of scrutiny."

In the end, it's up to each company to decide how much risk it is willing to take on — and whether the damages accruing from a service disruption might offset the savings and convenience promised by a cloud computing service.

"Cloud computing is reliable enough that if your business can tolerate the occasional outage, you're just starting out, and you don't have a lot to invest [in IT infrastructure], you can take a chance on it," says Info-Tech Research's Sloan. "You might possibly even build a business on it." ■

Waxer *is a freelance writer in Toronto. Contact her at cwaxer@sympatico.ca.*

Cloud PROS & CONS

Top perceived benefits of cloud computing:

1	Easy/fast to deploy
2	Pay for only what you use
3	Less in-house staff and lower costs

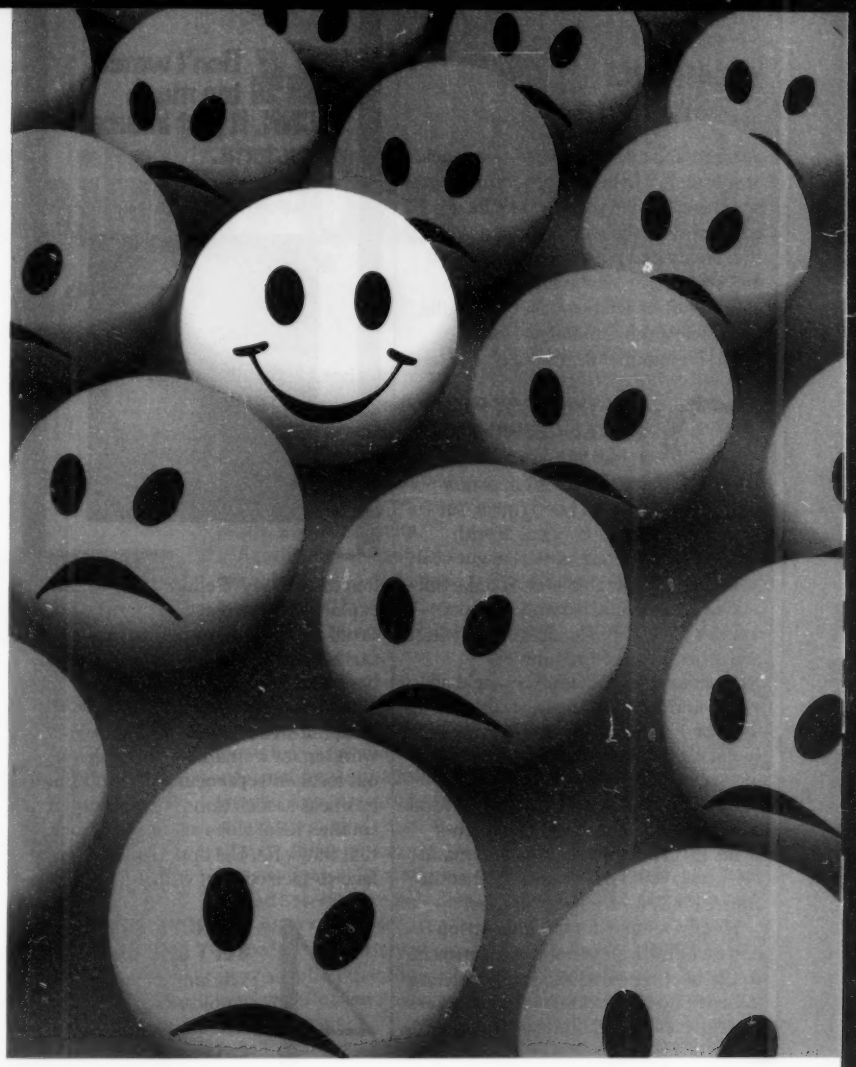
Top challenges of cloud computing:

1	Security
2	Performance
3	Availability
4	Hard to integrate it with in-house IT
5	Inability to customize it

What customers want from cloud computing:

1	Competitive pricing
2	Performance assurances
3	Understanding of my business and industry
4	Ability to move cloud offerings back on-premises

SOURCE: IDC SURVEY OF 244 CIOs AND BUSINESS EXECUTIVES, SEPTEMBER 2008



How to Stay Up IN A DOWN ECONOMY

Laid-off or overworked, IT pros still need to mind their emotional health. Here are six ways to keep your outlook bright in dark times. **By Julia King**

IT DOESN'T take a $250 visit to a psychotherapist to confirm what you feel in your gut each morning when you wake up — it's depressing out there. With market volatility, economic instability, pink slips and the ongoing threat of yet another round of IT layoffs — no wonder you feel like diving back under the covers.

If you've been let go, you might worry that you'll never work again. If you've escaped a layoff, "it's very discouraging when you see colleagues leave, because these people were your friends," says Beverly Lieberman, an IT recruiter and career coach and president of Halbrecht Lieberman Associates Inc.

Employees may feel trapped in a company where "they're sort of grateful to be still working, but they're insecure," she says, because virtually no employer is making any guarantees about IT or any other kind of job.

"Everybody is saying you can write off 2009 because there are no indicators it will get any better," Lieberman concludes. "We're praying for 2010."

But that doesn't mean you have to spend the rest of the year as an emotional cellar dweller. It's not easy, but it is possible for tech pros to nurture themselves and even bolster their professional credentials during these tough times, whether you're laid off and looking, or left behind and overworked.

So how exactly do you go about staying up in a down economy? *Computerworld* gathered tips from a quartet of IT career experts, including Lieberman; Boston-area career coach and author Naomi Karten; IT career expert, author and *Computerworld* columnist Paul Glen; and Nagesh Belludi, a professional software engineer and program manager at a large multinational company who also regularly counsels IT professionals. Here's their advice:

1 RETURN TO YOUR ROOTS

Remember why you first got into information technology? Bring back some of that enthusiasm — and maybe even master a new skill — by doing something you'd never be assigned to do on the job, just for the sheer technological challenge of it.

Write a new program, fix one that's

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been broken and bugging you for ages, or master a whole new programming language. Or use your tech skills to connect with the world: Build a Web site, create and post an original video on YouTube, or start a blog to share your IT views or showcase your skills. Heck, learn the functions — all of them — of your smartphone.

2 GET THE MOST FROM SOCIAL NETWORKING

Building and maintaining a network is important even in good times, but being connected with friends and colleagues can be especially valuable now. So take full advantage of social networking opportunities via Facebook, LinkedIn, Twitter and other online communities.

A network of contacts can yield advance notice of a company that's hiring — or laying people off. More broadly, social networking can help you read the tea leaves about the health of various vertical markets. For example, if several of your contacts recently found work in health care or switched out of manufacturing, you'll get an idea of what the future holds for those industries.

Finally, simple human interaction can be uplifting, even if it is electronic. Reconnecting with high school friends, college buddies and former co-workers won't necessarily help your career directly, but it can do wonders for your outlook by reminding you who you were before you felt like you were nothing but a job or a job search.

3 GET OUT INTO THE REAL WORLD

If you live near a university, check out its technology transfer center. These are university-supported incubators for technology research and start-up tech companies.

Personnel in technology transfer centers excel at helping people sell the business benefits of technology — a skill that IT professionals could often use help with.

"People in IT do not know how to sell themselves. When you look at programmers' résumés and how they interview, they talk about their skills in terms of C++ and other technical languages," says Belludi. "They don't explain that a project they worked on saved their company hundreds of thousands of dollars or what the business benefits of a project were."

> **"Don't watch too much CNN. It just induces hysteria."**
>
> **PAUL GLEN,** *COMPUTERWORLD* COLUMNIST

Beyond that, if you're thinking at all about striking out on your own or working for a small business, check out local entrepreneur clubs and small-business associations. The beauty of smaller, local clubs and associations is that they offer the opportunity to have face-to-face contact with peers.

4 IMPROVE YOUR SOFT SKILLS

Working on your communication, negotiation, relationship-building and presentation talents — the so-called soft skills — can maintain your sense of self-worth now and help you nail a promotion or land a new job in the future.

Courses that teach these skills are widely available at low cost at adult education centers and, in some areas, through the public library. Be sure to practice the skills you learn. Write reviews on Amazon.com — you could share your thoughts on IT-specific books or any other book or product that excites you. Think of your reviews as an opportunity to practice your writing and get a little visibility.

Or go a step further and submit a written proposal to speak at a professional association meeting, advises Karten. Those groups are always seeking speakers, and they can benefit from your wisdom and lessons learned. Being on their agenda creates professional connections that can prove useful, and it adds a credential to your résumé.

5 GET SMART

Keep sharp mentally and position yourself for the economic upturn by pursuing technical certifications and learning new technical and business skills now. If you've been thinking about a bachelor's or master's degree, for example, now is the time to enroll. If you're a manager and want to make it to CIO, enroll in an MBA program. If you have your sights set on being a chief technology officer, go after a master's degree in computer science.

A more affordable option is to attend webinars hosted by vendors, consultancies and research firms, often at no charge. Doing so can help you feel more in touch with the world outside your office. Webinars can help you stay abreast of the latest tech trends, and they're an excellent option for the overworked IT pro whose company budget no longer allows for formal training.

6 DON'T TAKE IT PERSONALLY

This downturn is affecting companies in every sector and employees of every rank.

As companies cut costs, they're forced to either overwork or lay off experienced, highly qualified IT professionals who have done nothing but superb work.

For people still on the job who find themselves constantly worrying about when and where the ax will next fall, Paul Glen has this advice: "Worry about things that are in your control only. Don't watch too much CNN. It just induces hysteria. Look around your business to understand the real risks."

If you've been laid off, remember, it's not you; it's the economy.

"Being laid off is never considered a negative when managers interview these days," says Belludi. "So IT folks should be candid about the fact that they were laid off. We ask [candidates] what lessons they've learned and what take-aways they have from the problems they've experienced while being laid off." ■

SaaS: Bailing Out Government IT

But security and lock-in are lingering concerns.

By Mark Everett Hall

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NEXT YEAR, as directed by the Constitution, the U.S. Census Bureau will enumerate the country's citizens. That can be tricky when some of them want to go unnoticed. But this time the Census Bureau will use software as a service to try to accomplish that task.

The Census Bureau is among an expanding array of government agencies that are subscribing to software as a service instead of buying applications to run on-premises. Every agency expresses concerns about security when it comes to using SaaS. But once potential issues are resolved, the flexibility, ease of deployment and, especially, the cost savings of SaaS make it an intriguing choice for users in government.

At the Census Bureau, JR Wycinski understands that individuals may have political, personal or cultural reasons for not wanting to be added to the agency's database. But his job as a program director is to count them any way he can.

So he's managing outreach programs to local governments and community organizations across the nation using Salesforce.com Inc.'s hosted customer relationship management tools, which replaced a legacy system.

As with any change, this one raised issues. "A big one was security," Wycinski recalls. "It was our main focus."

That's because one of the messages the Census Bureau wants to send to hard-to-count groups is that it can be trusted with the information it collects about people. Any security breach would break that trust. To address those concerns, Census Bureau IT staffers visited Salesforce.com's data centers to review security procedures, and they came away satisfied that the systems were locked down, Wycinski says.

At Voice of America, an international broadcasting service funded by the U.S. government, John Johnson, manager of Internet services, says moving from on-premises Web content management software to a pilot of an online service from San Francisco-based Clickability Inc. raised similar security concerns. "There's no acceptable risk," he says.

But Johnson says the fact that Clickability's data center has SAS 70 Type II certification helped reassure VOA that the SaaS offering would be safe.

Not surprisingly, the Defense Information Systems Agency takes data security very seriously. When it de-

SaaS Benefits Governments Big and Small

With 1.9 million workers on the federal payroll, many U.S. government departments have more employees than there are citizens in the town of Vernon, Conn. Yet the 30,000 people who call Vernon home get the same benefits from SaaS that big government does.

"The ROI is incredible," says SaaS user Michael Purcaro.

Michael Purcaro, Vernon's emergency management director, says that soon after he took the job, he conducted a test of the town's processes for notifying state and local officials during an emergency. He recalls that using a phone tree system took hours, plus there was a lot of confusion and not everyone was contacted.

Purcaro considered building an emergency notification app, but that would have been "cost-prohibitive," he says. And it would have taken months to roll out.

Instead, Purcaro subscribed to Dell Inc.'s Crisis Management and Alerting Services. The Dell system costs $1 per user per month, and it was working within two weeks.

Purcaro says the town has used the service several times during local emergencies like floods and power outages to relay information to state and municipal crisis managers. "The real value," he says, "is that I can see who has gotten the message and who can respond."

Like officials at larger government agencies, Purcaro appreciates SaaS's economic advantages. "The ROI is incredible," he says.

– MARK EVERETT HALL

cided to make the move to cloud-based computing, it created its own private cloud running on one of the Defense Department's internal networks, says Henry Sienkiewicz, technical program director at DISA.

Security is the No. 1 impediment to SaaS adoption by government agencies, says Robert Ames, deputy chief technology officer at IBM Federal. Right behind that comes fear of lock-in. Ames says agencies worry that if they deploy software in public cloud systems or use a SaaS vendor, they'll be left holding the bag if the company goes under.

That was a concern at VOA, where Johnson says managers did an extensive review of Clickability's business plans and had many long talks with customers before signing on. Even so, he says, "if they go out of business, we'd be out of luck."

John Curran, CTO at ServerVault Corp., a managed IT services provider in Dulles, Va., says government SaaS adoption is also slowed by a lack of clear direction from the top federal IT managers about whether to pursue SaaS offerings and, if so, which are acceptable.

For example, Curran says agencies need to have policies that clarify whether unclassified data and applications can be stored in cloud-based data centers that are not fully compliant with the Federal Information Security Management Act.

"They need guidance," he says. But he adds that it should be coming soon from the National Institute of Standards and Technology and the Federal CIO Council.

Such concerns have limited federal adoption of SaaS and cloud computing to about 11% of government agencies, according to a ScienceLogic LLC survey of 104 government employees attending the FOSE 2009 conference in March. But even so, another 11% of the respondents said they will be trying it to one degree or another in the coming year.

Familiarity With Cloud Computing

	Government	Private Industry
Not at all	51%	3%
Somewhat	39%	31%
Very	10%	66%

Base: 82 government respondents and 70 private industry respondents

SOURCE: KEVIN JACKSON, DATALINE LLC, FEBRUARY 2009

Despite federal IT professionals' unease with SaaS and cloud computing and their relative unfamiliarity with the technology compared with their counterparts in private industry, it's interesting that the FOSE 2009 poll shows that the percentage of federal agencies using SaaS will double in one year. That's because of another statistic from the survey: 47% of agencies represented by FOSE 2009 attendees expect budget cuts due to the economy. SaaS and cloud technology are becoming the only economical way for the government to pursue some IT initiatives.

Sienkiewicz says DISA's creation of the Rapid Access Computing Environment, a cloud-based, on-demand virtual hardware and software stack for military application developers, has pared his costs substantially. He says he's been able to pass along the savings to users in the form of a 10% price cut for those DISA services.

"The ROI has been exceptional," Sienkiewicz says.

The DOE's Karen Schneider says SaaS enabled her to reduce staffing.

And Johnson reports that "for the exact same services and capabilities," VOA is saving 30% of what it was paying for the packaged application.

The U.S. Environmental Protection Agency uses SaaS for customer-facing services such as FAQs. Tom Maloney, associate branch chief in the EPA CIO's office, says that by using a service from RightNow Technologies Inc. in Bozeman, Mont., his team cut $170,000 in annual costs by reducing the amount of time contractors need to spend managing FAQs.

RightNow's FAQ tools cut e-mail queries by 70%, Maloney says, adding, "We had five years of savings in the first year."

Karen Schneider, manager of the Energy Star Web site for the U.S. Department of Energy, has been using RightNow's FAQ management tools for two years. She says that despite a huge increase in Energy Star traffic due to interest in DOE policies such as energy tax credits, she has been able to reduce the size of the staff that handles citizen queries by one-eighth.

MORE THAN MONEY

Cutting costs always resonates with people, but SaaS offers other benefits, too. VOA's Johnson says that, with only two programmers on staff to work on a Web content management deployment, it would have taken a very long time to get any project done with the on-premises application. But the Clickability pilot is on an aggressive timeline, with a full rollout set for June. That plan is going forward despite the difficulties of implementing the system in various languages that use a range of character sets and can read left to right or right to left. If the pilot goes well, the Clickability service will likely displace the on-premises app for content in all 45 languages in use at VOA.

"We definitely like the time-to-market of software as a service," Johnson says.

Schneider praises the flexibility RightNow gives her to quickly change content without fiddling with HTML code. She says that's important during seasonal transitions, like when she needs to replace Energy Star data on furnaces with information about air conditioners.

For the Census Bureau, both speed of deployment and flexibility were big pluses. Wycinski says getting 700 employees nationwide on the service has gone smoothly. It's too early to say whether Salesforce.com's service will help deliver a complete count, but Wycinski says the hosted software will help the bureau analyze the effectiveness of various programs.

"There's lots of flexibility in generating more advanced reports than we had before," he says. "Anything we can measure, we will."

As with so many government agencies, the Census Bureau is starting to count on SaaS to get the people's work done faster and cheaper. ■

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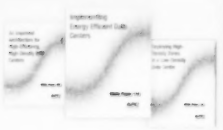

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So Far, the Cloud Seems Too Leaky

For a security manager, even a **test environment** could be **too vulnerable** when it's located in the **Web-accessible cloud.**

WHAT GREAT timing! I had no sooner returned from the RSA Conference, where my focus was on cloud computing, than I was invited to a meeting to discuss our first venture into "the cloud."

The IT department has decided to contract with an infrastructure-as-a-service provider to host a portion of our development environment. If this trial is successful, some of our production environment could be next. Having read up on the subject in white papers and attended seminars at RSA, I felt informed enough to ask the questions that needed to be answered before I could feel comfortable about an initiative that was going to open new portals to our network and our data.

And there's no question that this could expose us to new dangers. Our plan is to move our SAP development environment to the cloud. Our developers typically test apps with our actual production data. It's not a problem when they put our financial data on a test server in our own data center. It's another matter entirely when the server is far away and out of our control. In this case, in fact, our hosted servers will actually be located at a hosting provider's data center, so there are two degrees of separation.

The plan is to configure several virtual Linux and Windows servers on a shared VMware ESX Server. The cloud vendor wants us to set up a VPN tunnel. I'm not thrilled that we won't control the VPN termination point, and it doesn't help that the termination point is a Linux server running open-source VPN software.

Compounding my concerns, the vendor wants us to use a shared key for VPN authentication between the devices. I have countered that plan by mandating the use of certificates to handle authentication. I have also established firewall rules that restrict the servers at the server farm from accessing our network.

■ The vulnerabilities of the Web app are enough to make a grown security manager cry.

MAKING THINGS EASY

Next in my sights was the Web-based management application that our technicians must use. When you put this application side-by-side with our current data center access controls, the vulnerabilities of the Web app are enough to make a grown security manager cry.

Currently, a bad guy would have to know the physical location of our data center, obtain a badge to enter the building, procure yet another badge and somehow beat the biometric hand scan in order to enter the data center — and then he'd have know exactly which racks contain the servers he's targeting. In contrast, the Web app asks only for a username and password, it's available via the Internet, and all customers use the same URL. The only thing a bad guy needs is something like a keystroke logger. And here's a clue to how much the vendor values security: It gives clients temporary passwords with no requirement to change them upon initial log-in, and it doesn't enforce the use of complex passwords.

I had other questions as well, and the answers did not inspire confidence. How would we know if an unauthorized, rogue or disgruntled employee manipulated our environment? "Umm, well, uh, we haven't really thought about that, but our offering is strictly for development environments."

OK, then, how about encryption? "Since we cater to development environments, we advise customers not to use sensitive production data in the development environment." And do any customers really create data out of thin air, or do they just take what already exists from production?

The bottom line is that we have a long way to go before we establish a trust relationship between the cloud network and our company's network, and there is still quite a bit of room for improvement in cloud security. ■

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

Trouble Ticket

AT ISSUE: Plans are afoot to put some development servers in the cloud.

ACTION PLAN: Come armed with the toughest possible security questions for the vendor.

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JOIN IN

To join in the discussions about security, go to **computerworld.com/blogs/security**

DON'T SIGN AWAY YOUR Future

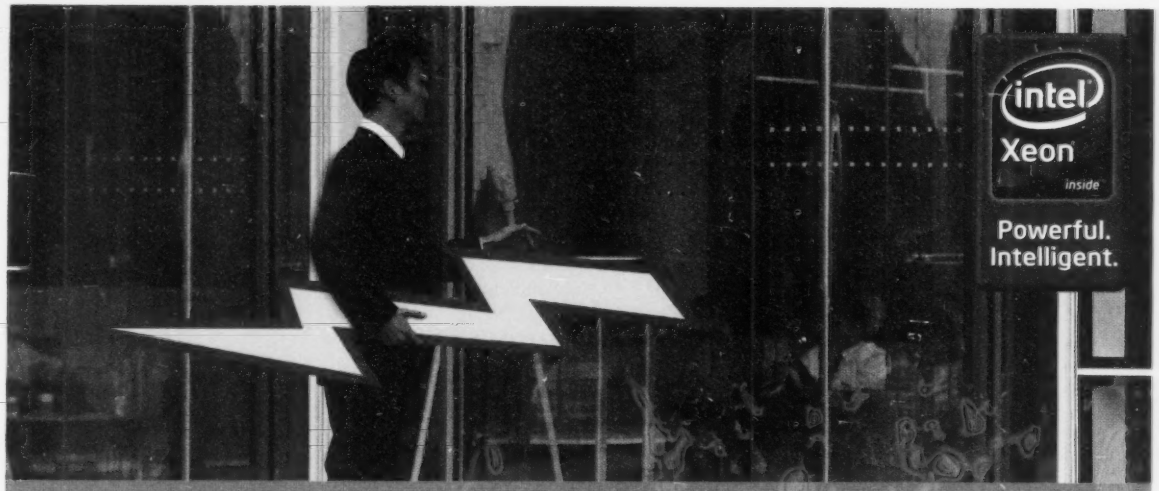
Noncompete agreements can hurt your IT career, unless you check the fine print. By Mary K. Pratt

CAN SIGNING a standard workplace document derail your career plans? Yes, says Jerry Luftman, executive director of graduate IS programs at Stevens Institute of Technology in Hoboken, N.J. He says a former student almost lost out on a big break because he'd signed a noncompete agreement, a contract that prohibits employees from doing certain work for a set period of time following the end of their current job.

The former student had been an IT manager at a Fortune 500 company but didn't feel that he was moving up fast enough. So he accepted a higher position at another big company. But when he gave his notice, his original employer threatened to go to court to enforce the noncompete agreement he had signed when he first took the job.

"The company was willing to fight to keep him from going to this new company, even though he had

Continued on page 34



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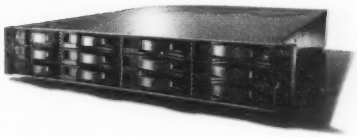

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> **"Fairness is a very, very big issue, and courts are looking at just how much companies are trying to restrict someone."**
>
> **SUSAN JOFFE,** ASSOCIATE PROFESSOR, HOFSTRA UNIVERSITY SCHOOL OF LAW

Continued from page 32

accepted the new position and given his resignation," Luftman says.

The new company was also willing to fight for him, though, and its lawyers helped settle the dispute, in part with assurances that the IT manager would disclose no proprietary information regarding his former employer.

Luftman says this happens often, because workers happy to be starting a new job will sign a stack of paperwork without considering the potential consequences down the road. "It's the kind of thing people don't think about until they get into this situation like this one," he adds.

Here's what you should know to ensure that you don't sign away your future.

1 KNOW THE DIFFERENT DOCUMENTS

Lawyers say they see plenty of workers who don't know what they've signed.

"People come in and say, 'I signed a noncompete,' and I look at it and say, 'No, it's not really a noncompete. It's a nonsolicitation,' " says Brad Schleier, managing partner at Schleier Law Offices PC in Phoenix.

In addition to having workers sign noncompete agreements, companies often have them sign nondisclosure agreements, antiraiding agreements and/or computer-use policy statements, says C. Forbes Sargent III, chairman of the corporate department and co-chairman of the employment law group at Sherin and Lodgen LLP in Boston.

Although these are all legal contracts, each one puts different restrictions on departing workers, Sargent says. A nondisclosure agreement says you can't divulge proprietary information, while an antiraiding agreement says you can't hire your former colleagues to work with you at your new job. A nonsolicitation says you can't seek out your current employer's clients once you depart.

2 STUDY YOUR STATE'S STANCE ON THE ISSUE

If you live and work in California, you've got it easy: The state has banned noncompetes in all areas except cases involving the sale of a company. But if you work elsewhere, know that the laws governing noncompetes vary from state to state.

Susan Joffe, an associate professor at Hofstra University School of Law in Hempstead, N.Y., says some states, such as Oregon, require employers to give hires the contracts before they start their new jobs. Some, including Massachusetts and Oregon, forbid employers from requiring existing employees to sign them without an additional "consideration," such as a raise or promotion.

If there's a legal dispute, the courts in some states tend to be more probusiness and are thus more likely to enforce noncompetes as they're written, while courts in other states want to promote the mobility of the workforce and might rewrite the terms or decline to enforce them, Joffe says.

3 LOOK AT YOUR EMPLOYER'S CHOICE OF VENUE

Even if you know your own state's law, you might have more homework ahead, because your employer can pick, to some degree, which state's laws will govern in the event of a dispute. Be aware of this as you sign the contract. If the company opts for its choice of venue, that will be written into the actual agreement — so read it before you sign. Schleier cites the case of an Arizona-based worker who signed a noncompete with a Delaware-based company that stipulated Florida law would govern in case of a dispute.

"Arizona is one state where you'd probably be stuck with that [arrangement], but if you had that in, say, California, you're more likely to get a court that will throw out the Florida law," Schleier says.

DIGGING Deeper

The following Web sites offer additional information about noncompete agreements. Be advised, though, that these are for general information purposes only; if you're in the midst of a contract dispute, your best bet is to hire a good employment lawyer.

- www.workplacefairness.org
- www.elinfonet.com
- www.employeeissues.com
- www.findlaw.com

– MARY K. PRATT

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4 REMEMBER: THE DEAL'S TIMING MATTERS

In states such as Connecticut, Minnesota, Washington and Wisconsin, employers are required to present noncompete agreements (and any other restrictive covenants such as nonsolicitation and nondisclosure agreements) to an employee prior to his first day of work.

The reasoning is that if the restrictive agreement is reached before the employee is hired, simply giving the person the job is considered "sufficient consideration" for agreeing to the restriction. However, if the employee has already begun working when he signs the covenant, even if only one or two

days of work have passed, an employer must provide additional consideration (such as a bonus, raise, promotion or training) beyond hiring that person. Courts in these states have made it clear that mere continued employment is not sufficient consideration.

For these reasons, Connecticut, Minnesota and Wisconsin forbid employers from requiring existing employees to execute noncompetes without offering additional consideration.

In Oregon, pursuant to a statute enacted last year, the employer must inform the employee in a written job offer at least two weeks before the first day of employment that a noncompete agreement is a condition of employment, according to Joseph A. Ciucci, a partner at Duane Morris LLP.

Georgia, South Carolina and Virginia are other states where the courts might uphold noncompete contract language, according to Joffe. "These states believe in the sanctity of a contract, and if the parties agreed to the terms, they won't modify it," she says.

So you really do need to read the fine print before you sign a noncompete, or you might wind up having a dispute settled by judge in a worker-unfriendly state.

5 ASSERT YOUR RIGHTS

Your employer can't dictate whatever it wants in all situations, lawyers point out.

An acquaintance in Michigan who designed software for the auto industry at an international company recently sought Ciucci's advice. The company was getting out of that software line and had recently laid off its Michigan workforce.

The company told Ciucci's client that to get his severance check, he had to sign a noncompete that would prohibit him from developing that type of software. It wanted to apply North Carolina law if there were disputes.

Is that enforceable? No, according to Ciucci. "They're having a layoff. They're getting out of that line of business, and they say North Carolina law controls. Good luck getting a Michigan court to apply North Carolina law if that company isn't even in the business anymore," he says.

Even in pro-business districts or states, courts aren't going to blindly enforce noncompete agreements, Joffe says. They look at how long the noncompete lasts, whether the prohibited work is defined and whether the geographic area where the work is prohibited is fair. They also consider how the relationship ended, since they're less likely to enforce a noncompete against a laid-off worker.

"Fairness is a very, very big issue, and courts are looking at just how much companies are trying to restrict someone," Joffe says. "Even states that enforce agreements want to make sure the employers aren't taking advantage, because the courts don't want to keep people from earning a living."

6 TRY TO NEGOTIATE

In theory, a noncompete agreement is a contract negotiated between two parties — both of whom should feel free to clarify terms, Joffe says.

"But in the real world, there are many more pressures when people are out of work and the job market is shrinking, and some employers might be tempted to take advantage," she says.

So how much leeway do you have in negotiating a noncompete? It depends, Joffe and others say.

The higher up you are, the more you can negotiate the terms, Schleier says. You also might have some pull if you have unique skills or were recruited.

If you're going to negotiate, you should start by finding out what your employer really wants to protect, says Sargent. For example, if your boss wants to ensure that you won't disclose proprietary work when you leave, you might be able to get the company to agree to just a nondisclosure agreement, he says.

Even if your employer is set on having you sign a noncompete agreement, Sargent suggests that you might be able to negotiate the length or geographic restrictions or even additional severance to compensate for the time you might be sitting on the sidelines. ■

Pratt *is a* Computerworld *contributing writer. Contact her at marykpratt@verizon.net.*

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■ OPINION

Paul Glen

Monitor Your Sponsors

IT HAS become an article of faith that projects without sponsors will inevitably crash and burn. But unexamined beliefs can lead us astray, and we need to be thoughtful about how we apply any maxim. In the case of project sponsorship, more is required of us than checking a box on a form and holding monthly status meetings.

In fact, some projects don't need a sponsor. Pure infrastructure projects, for example, are unlikely to attract a real business sponsor, any more than a revamp of the office restrooms would. You can call it aligning the business with the underlying plumbing if you like, but no one is going to step up to take responsibility. Everyone wants a toilet and a sink, but no one thinks they're mission-critical infrastructure until they're no longer available.

On the other hand, we sometimes fail to recruit a sponsor when one is needed. It might be that every potential sponsor is too busy, or they're wary that they could be blamed if things go badly. Sometimes a sponsor signs on but then tries to delegate his responsibilities so far down into the organization that decisions can't really be made in a timely fashion. In cases such as these, we give up and just get on with the project.

Even when we do recruit sponsors, things don't always work out well. Simply having a sponsor is not enough to ensure success. I've observed two distinct issues with sponsorship that commonly undermine its effectiveness.

The first of these is that sponsors and project managers fail to clearly define the sponsor's role. We often assume that sponsors will automatically know their responsibilities, but nothing could be further from the truth. Think about it: Business people are rarely steeped in IT project processes or technology, and they rarely study how business and technology interact. Even experienced sponsors can be confused, because no two projects are the same.

■ Beware of sponsors who become disconnected from their constituents on the business side.

Project managers and sponsors need to clarify what a project is going to need from its sponsor and how communication will take place. Does a sponsor have veto authority over some decisions, or does he operate in an advisory capacity only? Does the sponsor have budget authority? What are the boundaries of the sponsor's rights? How will sponsors be kept in the loop on project status?

This absence of clarity can lead to some misconceptions, on either side, about the nature of the sponsor's authority, including the following:

■ **The sponsor is the project boss.** The sponsor should be the advocate for the interests of the business community, but that is not the same as being the project supervisor. Business sponsors rarely have the expertise to oversee an IT project, and they are also unlikely to be effective at balancing the competing interests of the various communities affected.

■ **The sponsor is the über project manager.** Sponsors should not be consulted on every detail of daily project operations. Process is not their domain. They should instead focus on ensuring that users and the business get value from the product of the project.

The second common problem involves a sponsor who becomes politically disconnected from the business community. Those of us in IT might assume that just because the sponsor is actively engaged with us and is making seemingly reasonable requests, all is well. If we don't monitor the sponsor's connection to his constituents, we won't know when one starts to peel away from the other. And if the gap between the sponsor and the business grows, then the gap between the project and the business grows too.

If you want to effectively use sponsors, think carefully about what you need from them and how well they can ensure alignment. If your sponsor is unplugged, your project will be too. ■

Paul Glen *is a consultant who helps technical organizations improve productivity through leadership, and the author of the award-winning book* Leading Geeks *(Jossey-Bass, 2003). You can contact him at info@paulglen.com.*

Career Watch

DISAPPEARING JOBS

Forrester Research expects the total number of U.S. IT jobs to fall by 1.2% this year compared with 2008. The decline in employment will be even steeper within IT vendors.

NUMBER OF JOBS				
2005	2006	2007	2008*	2009*
IT occupations in IT departments in business and government				
2,573,867	2,639,676	2,712,838	2,774,097	2,754,080
IT occupations in IT vendors' product development units				
766,028	802,914	850,953	882,249	857,753
Total IT occupations				
3,339,895	3,442,590	3,563,790	3,656,346	3,611,833

*Projected

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SOURCE: FORRESTER RESEARCH INC. REPORT "DON'T PANIC! THE IT JOBS PICTURE ISN'T AS BAD AS YOU THINK," BY SIMON YATES, MARCH 2009. PROJECTIONS BASED IN PART ON THE "NATIONAL OCCUPATIONAL EMPLOYMENT AND WAGE ESTIMATES" FROM THE U.S. BUREAU OF LABOR STATISTICS

ASK A PREMIER 100 IT LEADER

Joseph L. DeVenuto

The CIO at **Norton Healthcare** in Louisville, Ky., answers questions on taking a lower-level position and what skills you need during a slump.

I have a lot of experience in networking, but I've been out of work since the beginning of 2008. I seem to be joined by more people all the time, so there's a lot of competition for jobs. I've got nearly 15 years of solid experience and great references, but I'm thinking about trying for some lower-level jobs that I've ignored so far, like help desk work. Two questions: Do you think I would be seriously considered, or will my résumé be tossed aside because I'm overqualified? And if I have success and land an entry-level job at this stage of my career, am I washed up?

The current economic environment is causing many leaders to re-evaluate the way things have always been done. You are correct that in the past your résumé may have been passed over. That's not because you would have been seen as overqualified but because of the perception that you would expect a higher salary than what is usually budgeted for an entry-level position. While salary expectations must be dealt with, organizations today are more willing to look in unexpected places to add skills and talents that were unavailable months ago. We have a more dynamic employment environment, which is creating a larger candidate pool filled with many professionals whose availability is not necessarily a direct result of their performance. Because of this, many people will need to move laterally or backward. At the end of the day, however, good workers (at any level) are good workers, and most organizations will recognize that and will work to put you in the "right seat on the bus" over time.

With the world economy in the biggest slump I've ever experienced, I'm wondering what sorts of skills are going to prove most valuable to companies in the near future.

The skills that are the most valuable to an organization don't change during a slump. They are simply getting more attention in today's environment. Being able to contribute to the success of an organization through your actions and activities will always be valued.

The specifics of your particular organization and its approach to the current environment will determine whether you add more value by contributing growth strategies, cost-saving measures, or general process improvements or efficiencies. In all cases, being able to execute on the strategies is also critical. When you are able to align technology with business processes and improve them, not just automate them, you are bringing value. Coming up with ideas is good; actually delivering on them is great.

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QUESTION?

If you have a question for one of our Premier 100 IT Leaders, send it to askaleader@computerworld.com, and watch for this column each month.

PAGE COMPILED BY JAMIE ECKLE

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Shark Tank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Testing, Redefined

Pilot fish and his team are called on to investigate a large computer that's running slowly because users are just abandoning their sessions instead of quitting properly. "We wrote a script that would detect the rogue sessions and kill them off," fish says. "Then we would report to the manager the names of the users who did not exit cleanly from the session, and the manager would have words with them. We warned the users that the script was being written and would be implemented. Day 1: After the script went live, we caught a rogue session that belonged to the manager, so it was decided he was testing. Day 3: We caught a session belonging to the manager, so we decided it was testing. After 10 days, we had caught the manager four times and no other member of the staff. The script is still – according to the manager – being tested. Until we catch a normal member of the staff, it will continue to be considered 'testing.' "

That Darn Reality!

IT steering committee at this company decides that it's time to upgrade to the latest version of its virtualization software. "When I inform a certain software developer of this, the developer flips out," says a pilot fish on the scene. "He states that his applications would never work in a virtual environment and that he had pages of evidence showing why this would never work. I ask if his applications are currently working. He says, 'Everything is running just fine in the environment they use now.' I then inform him that his applications have been running in a virtual environment for nine months, so everything should be fine. Developer stomps off and, as he walks away, mumbles, 'They shouldn't be.' "

Adjustable Security

This mortgage outfit decides to beef up security for users' laptops by adding whole-disk encryption, reports a support pilot fish. "The encryption program has three security questions you have to answer," fish says. If you forget your password, you can reset by answering the questions correctly. The first two questions are standard – your mother's maiden name and the street where you grew up – but the third question is up to you to choose. After months of using the system, one user calls fish complaining that he can't log in – and can't reset his password either, because his third answer is being rejected. Fish: What did you choose as your third question? User: "It's 'What is the rate of a 30-year mortgage?' I put it in, but the machine isn't taking it." Fish: Your answer has to be whatever the rate was when you set it up months ago. User: "How am I supposed to remember *that*?"

■ *Remember, Sharky wants your true tale of IT life. Send it to me at sharky@computerworld.com. You'll score a sharp Shark shirt if I use yours.*

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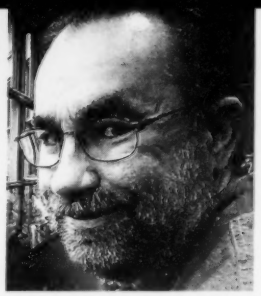
■ OPINION

Steven J. Vaughan-Nichols

Is Microsoft Shooting Itself in the Foot?



BELIEVE IT OR NOT, I rather like Windows 7. I still think XP SP3 is what you want if performance matters most to you, but 7 does OK on the racetrack, and most of Vista's biggest annoyances have either been fixed or dumped. Technically speaking, Windows 7 is exactly what Microsoft needs in order to recover from its Vista fiasco. Too bad the company seems to want to shoot itself in the foot.

Although Windows 7 pricing hasn't been officially announced, the word is out — the "word" actually being two words: higher prices. Whether you buy a single Windows 7 license or a few thousand, the expectation is that you'll be paying more.

Will this go over well? Let me check. Is the economy still a mess? Does anyone have much cash lying around? I don't think so, and neither do any of the companies that track such things. There's a reason why cheap-as-dirt netbooks have been the one hardware sector that has been showing some life: People can afford them.

Speaking of netbooks, it looks as if Microsoft is going to put a ton of restrictions on their use of Windows 7. Sources say vendors' choices will be Windows 7 Starter, Win 7 Starter for Small Notebook PCs and Win 7 Basic for Small Notebook PCs.

And Microsoft wants to define what a netbook is. According to it, a netbook has a 10.2-in. screen or smaller, no more than 1GB of RAM, a hard disk drive of no more than 250GB or a solid-state drive no bigger than 64GB, and a single-core processor no faster than 2 GHz. Oh, and while we're at it, the whole shebang has to use 15 watts or less, not including the graphics and chip set.

Well, at least the company has pulled its "no more than three apps" limit from the Starter Edition. Of course, with those hardware restrictions, you're going to be resource-crippled anyway.

I've got to wonder what Microsoft thinks it's doing. Its latest ad campaign focuses on the low price of PCs vs. Macs. Of course, what those ads don't tell you is that buying security software is an absolute requirement. Still, it sounds good.

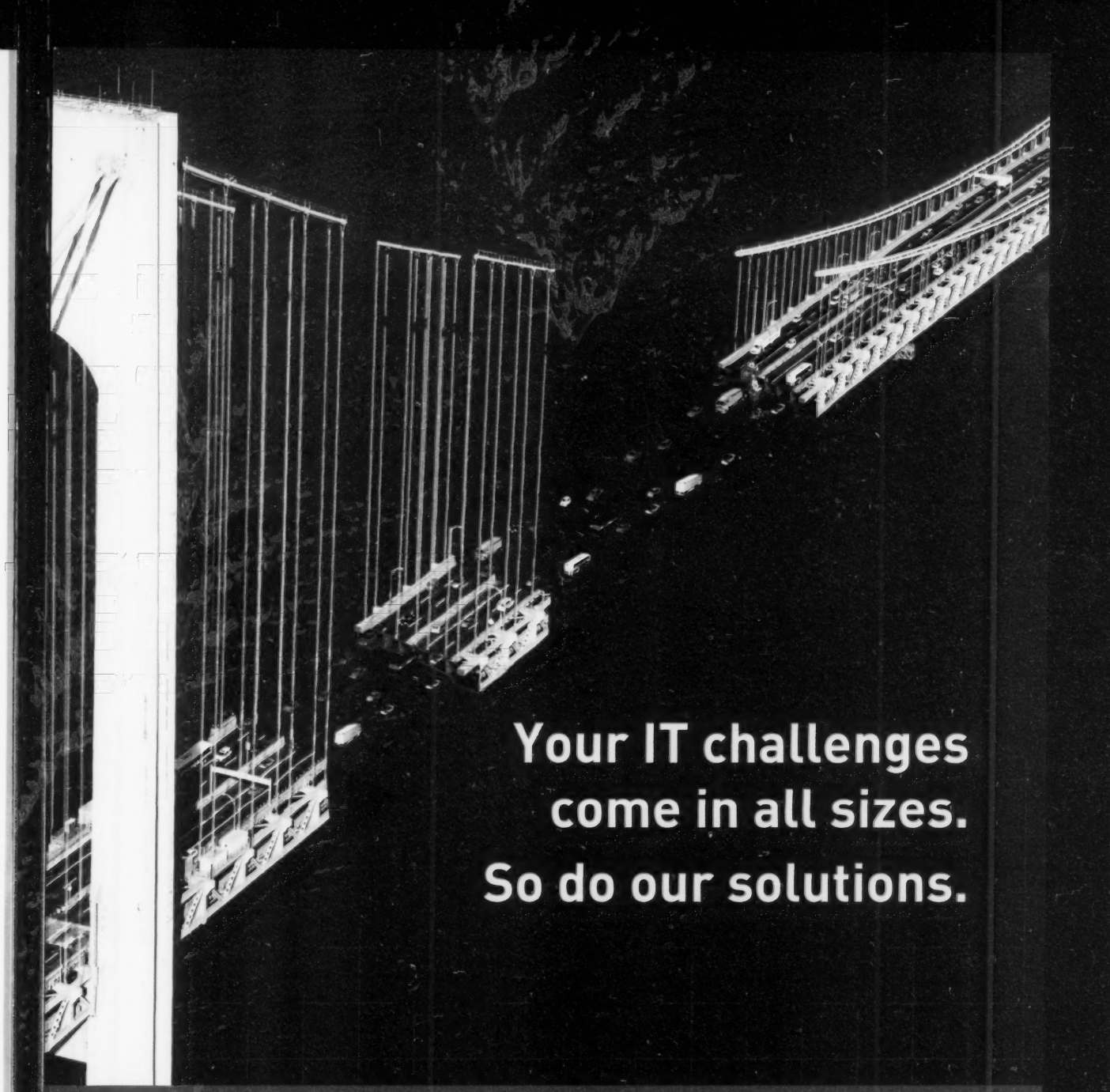
■ High prices and crippleware could harm Microsoft's business more than Vista did.

But as desktop Linux becomes a significant challenger, Microsoft is losing its price advantage. Microsoft managed to snatch the netbook market away from Linux by reviving XP Home and offering it to OEMs for next to nothing. It's foolish of Microsoft to think it can hold on to that market with restricted hardware and bottom-end versions of Windows 7.

There was a time when Microsoft could shaft netbook buyers and vendors like that and end up the rich market leader. But it should beware of a trio of netbook-oriented Linux initiatives: Google's Android, Intel's Moblin 2.0 and netbooks powered by chips from U.K.-based ARM. Any one of those could threaten Microsoft: Android because Google is the one company that has a user reach as great as Microsoft; Moblin because Intel seems to be breaking up its Wintel partnership for new ones with everyone in desktop Linux; and ARM because netbooks based on its architecture may be the cheapest of all and Windows won't even run on them.

After Vista, Microsoft can't afford to blow it again. Steve Ballmer needs to learn that Microsoft will no longer get whatever it wants. Microsoft needs to make Windows 7 as attractive as possible not just to techheads, but to individual users and business people who make PC buying decisions. High prices and crippleware, combined with pressure at the high end from Macs and at the low end from Linux, may end up injuring Microsoft's already precarious business even more than Vista did — and that's saying something! ■

Steven J. Vaughan-Nichols *has been writing about technology and the business of technology since CP/M-80 was cutting-edge and 300bit/sec. was a fast Internet connection — and we liked it! He can be reached at sjvn@vna1.com.*



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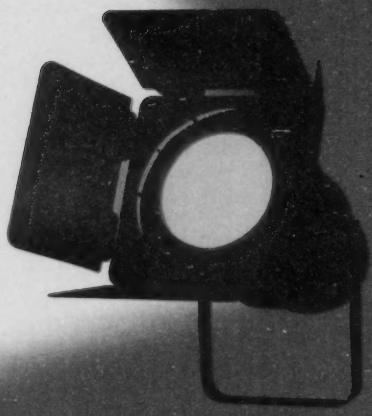

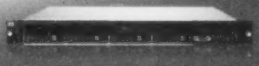

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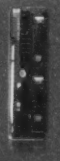

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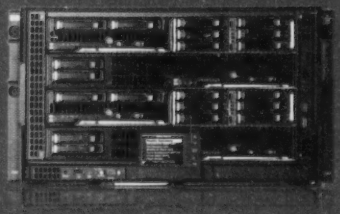

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